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Remarks on the Mummied Heads taken from the Jivaro Indians of Ecuador, with an account of the various modes of Embalmment, being an abstract of a paper read before the American Ethnological Society. By J. KING MERRITT, A.M., M.D., of New York.

PART I.

I desire to call attention to two mummied heads of diminutive size, which, with a number of others, were recently obtained from the Indians who inhabit the inaccessible and mountainous region around the base of the volcano of Sangay, in the province of Chimborazo, where the old Spanish town of Macas is situated.

There were ten of these specimens taken from the Indians, so far as I am informed by Mrs. Hassaurek, the wife of the American Minister at Ecuador, through whose kindness I am allowed the privilege of presenting these curious objects, with the accompanying history and description of them.

Mrs. Hassaurek states that these ten mummifications are in the possession of the following parties, viz.: four were bought by Mr. Hassaurek; three by the Spanish Minister, who sent them to Madrid; two by the French Chargé d'Affaires; and one by the English Consul. Of the four obtained by Mr. Hassaurek, one is retained by himself, and one he presented to a Dr. Mackay, who is in Washington at present, and has been exhibiting his specimen to the savans of the Smithsonian recently. The remaining two are those under our consideration. I am told by Mrs. Hassaurek that there is a tradition among the Indians, that these heads were originally taken from "Huacas"* belonging to their ancestors,

* "Huacas" are the cemeteries and holy places of the aboriginal races of Peru.

many generations ago, and that since they have been kept in their huts, preserved with great veneration, and jealously guarded as household divinities. An additional statement is given concerning the history of these interesting and mysterious heads, in a communication from Mr. Hassaurek himself, who sent them from Quito to this country last summer. He writes as follows:—

"These heads were formerly in the possession of the Indians who live in the town of Macas, which was anciently of great importance, but has since decayed, owing partly to the general decline of Spanish America, partly to the ruinous policy of the Spanish Government, and partly to the unmanageable character of the Indians. It has always been observed that the Indians of Macas treated the heads with a veneration verging on idolatry. I was told by a former Governor of Chimborazo, to which province the town of Macas belongs, that the oldest Indians in the country did not recollect the time when these heads were *not* in the possession of their tribe. They said that a great feast was given every year in their honor, when the old men approached them with great submission, having their lances pointed downwards, while the young men remained within a respectful distance. Concerning the threads which are attached to the lips, I have heard various and contradictory accounts. Some say they indicate the number of enemies slain in battle by the warriors to whom these heads were attached. Another account is given by Dr. Andrade, the Curate of the village of Machuchi, who says that these heads were treated as idols by the families which possessed them, and they attributed to them many supernatural qualities. They especially implored them to keep their family secrets, and for every secret intrusted to the idol a string was drawn through the lips. Others say that the strings are only ornaments, because the Indians on solemn occasions wear these heads suspended around their necks, and consequently the pendent strings were intended to improve the appearance of them. The art to contract the heads to such a wonderful miniature size seems to have been lost, like so many other arts known to the ancient Peruvians; as, for example, the cement mixture which they used for building purposes instead of lime mortar, that gave to the different stones of which the walls were composed the appearance of one solid block. How these heads in question were contracted to such a diminitive size, I can only repeat rumors; one is, that they were contracted by hot stones or pebbles, which were put into the cavity of the head after the bones were removed; another is, that they were contracted by a process which occupied a year. The aforesaid Dr. Andrade says, 'that if one should be the head of an enemy slain in battle the victor will do penance for the time necessary in the preparation of the head, that he fasts and prays to atone for the deed, but when the head is mummified he then adopts it as an idol. There is not, however, any account of such heads being prepared in these times, but they are considered relics of past ages, which have been handed down from generation to

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generation. All these statements and traditions may be considered as imperfect, or suppositions of the present day. But, nevertheless, this is certain, *that these heads were in the possession of the Indians at Macas, by whom they were treated with great veneration.* I bought them of the present Governor of Chimborazo, *who undoubtedly had forcibly taken them away from their owners.*' Mr. Farrand, who has been a number of years in Ecuador and Peru, and has traveled much, informs me 'that the Indians at Macas and the vicinity do not have at the present time any intercourse with the Spanish population, but carry on a traffic with an intermediate friendly tribe, called the Napos, who maintain a trading intercourse with them.' He also states that he has heard there is not a white person now in the town of Macas."

The Indians of this section speak their native original language, and practise their ancient manners and customs. They belong to that fierce, warlike, and proud Jivaro family of Indian tribes, which were never conquered by the Incas. At the time of the Spanish conquest, however, most of the tribes of this intractable family were partially subjugated. The tribe which inhabited the region around the base of the volcano of Sangay, and on the banks of the river Morona, were so unfortunate as to have in their country abundant deposits of gold, and consequently the attention of the "Conquistadores" was attracted to these. Soon their country was overrun, and the town of Macas built, which is situated on the river Morona, one of the branches of the sources of the Amazon, and is 130 miles southeast of Quito. Macas is also but a short distance from the volcano of Sangay, which is one of the most active volcanoes on the globe at the present time. The Spaniards never attained complete control over the Jivaro Indians, nor to any extent civilized them. They remained sullen and uncompromising, and when, on the decline of the Spanish dominion in Peru, the opportunity offered, they drove from their country the remnant of the intruders, and relapsed into their original independent and isolated state. They are described as being quite small, but very active and muscular, with black and very animated eyes, and with bent noses and thin lips. They use the lance with remarkable dexterity, and the shield exceedingly well.

Wm. Bollaert, F.R.G.S., in a brief paper on the idol heads of the Jivaros recently published in the *London Intellectual Observer*, thus speaks of this people and these deified heads:—"They are an ancient and warlike people, and their history is given by Velasco, the historian of Quito, together with an account of their conspiracy against the Spaniards in 1599, an outbreak which procured for them the title of 'Araucanos' of the North. At that period they made the Governor of Macas prisoner, and killed him by pouring molten gold down his throat; afterwards they destroyed the Spanish settlements in their part of the country *in one day*, killing the men, but taking the women into captivity. In modern times many expeditions have been organized to punish them, but

all have failed. The Jivaros are a warlike, brave, and astute people; they love liberty, and can tolerate no yoke. Many have beards and fair complexions, most probably arising from the numbers of Spanish women they captured in the insurrection of 1599. They have fixed homes, cultivate 'yucas,' maize, beans, and plantains, and their women wear cotton cloth. They live in well built huts made of wood, and sleep in fixed bedplaces instead of hammocks. Their lances are made of the Chonta palm, the head being triangular, thirty to fifty inches long, and ten to fifteen inches broad. They are accustomed to take a strong emetic every morning, consisting of an infusion of the 'guayusa,' or tea plant, for the purpose of getting rid of all undigested food, and being ready for the chase with an empty stomach. Their hair hangs over their shoulders, and they wear a helmet of bright feathers. Their branch tribes are constantly at war with each other; all the tribes speak the same language, which is sonorous, clear, and harmonious, easy to learn, and energetic. At each village they have a drum called 'Tunduli,' to call the warriors to arms, and the signal is repeated from village to village. When engaged in war their faces and bodies are painted, but during peace they wear breeches down to their knees, and a shirt without sleeves. One of their prominent customs is to deify the heads of their prisoners. This fact has been known for some time, but only lately have any specimens been obtained. The first was brought to Europe by Professor Cassola in June, 1861, and was exhibited to a few persons in London. This had been stolen from a temple on the river Pastasa. At the latter end of the same year another specimen fell into the hands of Don R. de Silva Ferro, Chilian Consul in London, with an explanatory document, which has been translated by Mr. Bollaert, and communicated to the Ethnological Society, together with some accouut of the Jivaros themselves. An idol head was obtained through a baptized Indian, who persuaded a Jivaro notorious for ill luck that this was occasioned by the imprisonment of the idol, who was desirous to travel. The Jivaro handed it over for this object, when it was taken to the Governor of Chimborazo, who sent suitable presents to the Indian in return for his interesting gift. These curious trophies are thus prepared, *according to tradition*:—After a war the heads of the victims are cut off, the skull and its contents removed, and a heated stone (*it is said*) is introduced into the hollow of the skin; desiccation goes on, and it is reduced to one-quarter its original size, retaining some appearance of the features. A feast ensues, when the victor abuses the head roundly, to which the head is made to reply in similar terms —the Indian priest being the spokesman for the head, or 'chancha' (an Indian name for a sow), and he concludes his part thus:— 'Coward, when I was in life, thou didst tremble at the sound of my name. Coward! some brother of mine will revenge me.' The victor at this raises his lance, strikes and wounds the face of his enemy, after which he sews the mouth up, dooming the idol to

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perpetual silence, excepting as an oracle; questions being put to it when the inquirer is under the spell of a narcotic. When the Jivaro is pressed by the enemy, and has not time to cut off the head of an enemy, the ceremony is performed on the head of a sow, which is adored as a real idol head. Should the fruits of the earth not be in abundance, the women hold a feast of supplication to the head, and if their request is not granted, the hair is shaved off and it is thrown into the woods."

This is all the history concerning these heads which I am able to give with the brief accounts of this people, and of the locality whence they came. I will now proceed to describe succinctly the heads which are in my possession. But first, I may be allowed to indulge in a portraiture of the general appearance of these specimens of mummification. We see a head and face scarcely the size of a half-grown howling monkey, with a great profusion of long, lank, black hair; also, we see a fierce and sooty pigmy face, decorated with a dingy tassel of cotton cords pendent from its compressed and protruding lips, and wearing the scowling expression of a Comanche warrior. If one can realize such an object, he will entertain an idea of the first impression received by a casual observer. Though these nondescripts are novel and startling to ordinary observation, still more do they become mysterious and wonderful as one examines and studies them. I will here mention some of the peculiarities pertaining to them. 1st. The size of the entire head and face is about equal to the medium fist of a man. 2d. The osseous structure, the brain, the eyes, the tongue, and all the inner soft parts, except the muscular tissues in close connection with the integuments, have been removed. 3d. The external surface of the integument is jet black, and of polished smoothness, without the least appearance of shriveling, and retaining in a marked degree the character of human skin. 4th. The tissues of both head and face are hard and unyielding as ebony, and emit a sharp and almost metallic sound when percussed. 5th. The inner surface of the cranial wall is knobby, spongy, and mouldy, with the pale color of undressed leather, as seen through the large opening at the base of the head, at which point it was severed from the body. 6th. The decapitation was rudely performed with a dull instrument (judging from the jagged edge of the incision), at a point of the neck anteriorly corresponding to the top of the thyroid body, and posteriorly at somewhat a lower level, so as to include with the head that portion of the nucha which is ordinarily covered with hair in man. 7th. The general configuration of the specimen is as follows:—the head and face are exceedingly narrow, but quite long in their antero-posterior axis; the forehead is rapidly retreating; the sinciput is contracted, low, and straight, and the occiput is very prominent and projecting backwards.

It is evident that through the foramen magnum, or aperture at the base of the head resulting from the decapitation, the brain, the tongue, and most of the bones of the cranium and face were re-

moved, from the fact that this opening has been enlarged by vertical incisions, which have been closed by sutures of cotton thread. The scalp is clothed with a profusion of straight, stiff, and rufous black hair, which falls in tresses the length of nearly two feet from the vertex posteriorly, while anteriorly the locks are cropped after the usual Indian custom. The hair is firmly attached to the scalp, and is not at all friable. Examination under the microscope by Dr. Shrady, showed that the individual hairs differed in no important respect from those of the Anglo-Saxon race: some were oval in shape, others cylindrical, and a few inclined to be triangular. The rufous hue is probably owing to the exposure to the sunlight and the weather, for this is more decided on the vertex and among the outer tresses than observed among the inner locks when brought to view. On the right temple, about three-quarters of an inch above the top of the ear, and just within the limits of the hair, exists an irregular opening through the scalp, the edges of which are especially ragged, spongy, and friable. This is the fact in regard to both specimens, the only difference being in their locality, as one is just anterior to the margin of the hair in the right temple. I am disposed to think that these were produced at the time of death, and are the results of a wound inflicted by a blunt instrument, as the conditions of the tissues in their vicinity are indicative of the infiltration and softening of the parts, which rendered them less able to resist the tendency to decomposition. At the vertex of the scalp are two small perforations, through which pass a loop, and this is undoubtedly intended to suspend the head about the neck of a person, as the hair around these perforations is worn away apparently by friction. The several parts of the external ear present their natural configurations and relations so perfectly, that it is difficult to imagine any contraction having occurred at all; they do not exhibit any of the shriveled or pinched appearance always seen in desiccated fibro-cartilage. On close examination can be seen the hole through the lobe for the ear-ring, and in the case of one there is a broken fringed loop still attached, and passing through the perforation of the lobe. In the delineation of the facial features I think no one will deny that there is little to be found which would attract the limner in search of the lines of beauty, yet do we see the outlines and expression of the human face remarkably well preserved. On the right side of the forehead, near the irregular opening in the right temple already described, there is in one specimen a depression with an incision closed by sutures; a similar incision and depression occur in the other specimen, but through the left temple, and closed by sutures. These seem to have been made for the purpose of removing the inner parts implicated in the neighboring battle-wounds, so as not to disturb them, that they should remain in the same condition as they had occurred. There are likewise incisions closed by sutures existing at the base of the nose between the orbits—in one case extending from one orbit to the other. These were also made,

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evidently, to remove the bone, and inner parts in these vicinities. The eyebrows are distinct, and especially abundant at the nasal extremities; the ciliæ are firmly attached, and of a brown hue. The eyelids are preserved, but closed and inverted; the ciliary borders are fringed with eyelashes. The nose is prominent, expanded, and unshriveled; in both nostrils are abundant ciliæ, which are firmly attached and very stiff. The cheeks are unwrinkled, and present the natural outlines at the malar and zygomatic regions, thus giving a characteristic Indian expression to the face. The lips are somewhat imperfect in both specimens, only slightly so in one, however, and have been repaired by a resinous substance. They present a compressed, puckered, and pouting appearance, as if drawn together by interrupted sutures; there are three perforations through both lips, which contain loops, and to these are suspended a short horizontal braid, which is composed of nooses in regular order, made by attaching the long pendent cords at their middle—so that there is a horizontal base-cord suspended by the loops through the lips, and this base-cord supports a long pendent tassel of cotton cords, about twenty inches in length. I have been thus explicit in the description of this tassel pendent from the lips, because in some respects it resembles the Peruvian "Quippu," which was the chronicler of events during the Inca sovereignty. At the lower portions of the cheeks and beneath the chins of both specimens, the integument presents a faint reddish tint, which seems to be produced by a pigment of an earthy character, like that used by the South American Indians to paint their faces in time of war, and to decorate their pottery. An accidental fracture which has occurred recently in the case of one of these specimens, and which embraces quite two-thirds of the vertical circumference of the head, gives the opportunity to examine the tissues of the integuments unchanged by long exposure. The exhalant and absorbent vessels extending from the epidermis to the cutis vera, the follicles and hair processes, which also pass through to the skin, all are distinctly seen not infiltrated with any foreign substance, but in a normal and simply desiccated state. The inner surface of the vertical region of the scalp of one specimen presents a black and glistening aspect, as if resulting from the application of a degree of heat sufficient to roast the parts, *which has evidently occurred at a comparatively recent date, and is not at all apparent in the other specimen.* The diameters and circumferences of these heads, when compared with those made by Dr. Morton of the smallest cranium of an ancient Peruvian, as published in his Crania Americana, are about one-third as great. Thus we see in the delineation of these two specimens of mummification that their conditions and features in conjunction are sufficiently pronounced and perfect to enable one to arrive at the conclusion that they are the integumentary and muscular portions of adult human heads reduced to their present diminutive size. Besides, the general configuration of these idol heads resembles in an eminent degree

that of the crania of ancient Peruvians, according to Dr. Morton, who thus states, "They are small, greatly elongated, narrow their whole length, and with a retreating forehead. The hair is uniformly long, lank, and appears to have been worn at full length by both sexes; its natural blackness is preserved, notwithstanding centuries of inhumation. I have seen," he says, "some skulls of this race, which must have been naturally very long and low, yet in order to exaggerate a feature that was considered beautiful, compression has been applied until the whole head has assumed more the character of the monkey than the man." These horizontally elongated heads found in the Peruvian cemetery of Arica, have a conformation prevalent among the old Aymara tribes which inhabited the shores and islands of Lake Titicaca, and whose civilization seems evidently to antedate that of the Inca Peruvians.

PART II.

The question now arises—That if these mummifications are adult human heads reduced to pigmy size, what was the process adopted by which this was accomplished? We know from the writings of Herodotus and Diodorus Siculus that the processes of embalming practised by the Egyptians were elaborate and complicated; also that all the mummies ever found or alluded to were of the entire person, excepting the internal organs, and the external soft parts were invariably impregnated with foreign substances as preservatives. It is thought, however, that the real method of embalmment is not easily comprehended by us moderns, for some doubt the possibility of removing the brain through the nostrils, and others have supposed that the intestines were not removed at all. But it is a general conclusion that there were two principal processes adopted by the Egyptians, by which in one case the whole members, features, and expression were preserved entire, and in the other and more general operation, the flesh was consumed, and nothing except the skin and bone were retained. Examples of the former are not now extant, but there are two kinds of mummies still obtained in Egypt. Those in a dry, indurated state, completely impregnated with resinous matter, which, from its hardness, may be broken in pieces; and those which, with their envelopes, are soft and yielding upon external pressure, and prepared with very little resinous matter, and with nothing but vegetable mould in the cavities. Although the flesh unquestionably was in certain cases preserved, it seems probable that the body was more usually reduced to a skeleton and boiled in the resinous and antiseptic mixture which was invariably used. The Garunches of the Canary Islands practised embalmment quite extensively. Their history is involved in great obscurity, and their existence is best proved by the remains of the dead, for their posterity has been for many years almost, if not entirely, extinct. "Their mode is supposed to be, for it is not explicitly known, as follows: Apparently the brain and intestines were removed entirely, then the body

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was washed in an infusion of pine-bark; next, it was anointed with butter, or warm grease, impregnated by boiling with such odoriferous herbs as grew in the country, and afterwards the body was exposed to the sun. When the body became well dried the same operation of anointing was repeated. These alternate operations of anointing and drying in the sun were practised until the body was thoroughly impregnated with the aromatic onguent, and was reduced to a very light weight. Then the body was wrapped in an envelope of three layers, which were composed of bandages of tanned buck or goat-skin, three inches broad. The bodies thus embalmed have been found in the caves in the mountains, occupying niches in the rocks. One that was recently examined presented the features of the face quite perceptibly, the skin of the whole body well preserved, dry, but pliant, and of a deep brown color. *The hair was very long and black, but easily detached from the scalp.* Thirty-two teeth were found in the jaws, and so firmly fixed as to require a dental instrument to remove them. The back and belly were covered with hair; the skull was empty, but the cavities of the thorax and abdomen were full of a grain resembling rice." "At Nukahiwa, one of the Marquesas Islands, it is said that embalmment is practised at the present day. The process is as follows:—The body is washed and laid on a platform, and then constantly rubbed for nine months with cocoa-nut oil to repel the putrefaction. From this continued application of the oil and accompanying friction the body becomes hard as stone, and quite incorruptible. At the expiration of a year the friends of the deceased partake of a feast, during which they thank their gods that he has been permitted to arrive at the other world. After the feast the body is broken up into small pieces and packed in a box, and carried to the burying-ground, which is styled 'Morai.'" Capt. Cook, in his Voyages, states that the Otaheitans preserve the bodies of their chiefs a long time for public exposure. They accomplish this by taking out of the abdomen the intestines, and then stuff the cavity with cloth. After this they lubricate the body freely with cocoa-nut oil. At Palermo the bodies of those of high rank have been preserved in catacombs near the city for centuries by the simple process of desiccation. The body is dried in a stove heated by a composition of lime. The flesh of these mummies is dried hard, and shrunken on the bones, but the contraction and distortion of the features exhibit hideous pictures of mortality. The old Spanish writers state that the ancient Peruvians preserved the bodies of their dead by a simple process, very unlike the elaborate embalming of the Egyptians. According to these writers, the Peruvian method consisted *in exposing the body to the action of the cold, exceedingly dry, and highly rarified atmosphere of the mountains.* Such, indeed, seems to be the opinion of Garcilasso de la Vega, though some writers speak of resinous and other substances having been used for embalming the body, as, for instance, Acosta declares, "that one of the sovereigns of Peru was so well preserved

by a kind of rosin, that his body seemed alive." The appearance, however, of one of the royal mummies found at Cuzco, as reported both by Ondegardo and Garcilasso de la Vega, makes it probable that no foreign substance was employed for their preservation. Prescott, in speaking of the embalmed bodies of the Incas in the Great Temple of the Sun at Cuzco, says, that "they sat with their heads inclined downwards, their hands placidly crossed over their bosoms, and their countenances exhibiting their natural dusky hue, which was less liable to change than the florid complexion of the European. Their hair was raven black, or silvered over with age, according to the period of life at which they died. It seemed like a company of solemn worshippers fixed in devotion, so true were the forms and lineaments of life. The Peruvians cherished and venerated these relics of their Incas, and as they were carried through the streets, decently shrouded with a mantle, the Indians threw themselves on their knees in sign of reverence, with many tears and groans. Also on certain festivals the revered bodies of their sovereigns were brought out with great ceremony into the public square of the Capitol. Invitations were sent by the captains of the guard of the respective Incas to the different nobles and officers of the Court, and entertainments were provided in the names of their masters, which displayed all the profuse magnificance of their treasures. The banquet was served by menials of the respective households, and the guests partook of the melancholy cheer in the presence of the royal phantom, with the same attention to the forms of courtly etiquette, as if the living monarch had presided." The Peruvians secreted these mummies of their sovereigns after the conquest, that they might not be profaned by the insults of the Spaniards. Garcilasso de la Vega saw, in 1560, the five mummies discovered by Ondegardo in Cuzco, and thus speaks of them: "They were dressed in their regal robes, with no insignia but the 'Llautu' on their heads. They were in a sitting posture, and perfect as life, without so much as a hair or an eyebrow wanting." Now, in all of these accounts of the different processes of embalming, and of the conditions and appearances presented by the various mummies of both hemispheres, do we find anything analogous to these diminutive Macas heads? None of the processes described suggest the idea of great shrinkage, except that of simple desiccation. In the case of the mummies at Palermo the soft parts are greatly shrunken, but they are equally distorted. How much of this distortion is owing to the presence of the unyielding osseous frame, and the application of artificial heat, which produced rapid desiccation, and how much more the shrinkage might have been if the bones were entirely removed, I am not prepared to say; still, it is my opinion that these circumstances were the causes of the distortion to a great extent, and that the shrinkage would be greatly increased by the removal of the bony attachments. Now, if the Peruvian method of *slow* desiccation is duly considered *with the perfect results alluded to*, we may

reasonably presume, that if the bones of the body should be removed, a regular and uniform shrinkage might occur without much distortion; still, there is a limit to this, and beyond this limit of shrinkage, if urged by any process, I am disposed to think distortion would occur. Therefore, I conclude, that if the very slow process of desiccation be adopted by the exposure to the well known atmospheric conditions existing on the altitudes of Peru and Ecuador (one of the influences of which is to repel *naturally* the putrefactive tendency in dead animal tissues), contraction of the soft parts would be produced regularly and smoothly, if not interfered with from unyielding osseous attachments, and as this is limited, consequently I am forced to think that the Macas heads originally were exceedingly small, and have been preserved and reduced to their present size by the *simple process of slow desiccation, there being no evidence of impregnation of the tissues with resinous or any other foreign substance.* In reference to the fact that their configuration has been maintained so perfectly, I think this can be explained in this way: the manipulator has, by the simple process of stuffing the cavities after the removal of the bones with some pliable and elastic material, prevented the soft walls of the head and face from collapsing—a result not difficult, if we admit that the tendency to distortion is comparatively slight under the process of *very slow desiccation.* And after the tissues have become somewhat stiffened by the desiccatory process, then by persistent manipulation the outlines have been fashioned after the prevailing taste, which was, as we are told, to exaggerate the natural peculiarities obtaining to the cranial developments of the race. The next question for consideration is—Why were *the heads only* thus preserved, and to whom did they belong? We will recollect that in the accounts given of mummies there is no allusion made to the preservation of the heads either alone or separate from the body. There is an approximation to the idea in the custom and to be practised by the Indians at Fort Mulgrave on the North West Coast, and some other neighboring tribes. They decapitate their dead chiefs, and place the heads in a box by themselves. This singular custom also prevails in some of the South Sea Isles, as the Ladrone, and Society, and Gambier groups. But none of these Indians appear to practise the art of preserving the bodies or heads of their dead as mummies. It therefore appears to me that these Macas heads are the mummified trophies of war; that they are the heads of warriors slain in battle, and were preserved by the victorious combatant, as the North American Indian does the scalp of his fallen enemy. There are several reasons for this conclusion, which I will enumerate. First, the unnatural and unprecedented character of the custom, which would decapitate and mutilate the body of a cherished friend, or highly respected person, for the sole purpose of preserving a portion of it to be worn about the person. Second, the fact of the existence of the perforations through the vertex of the scalp from which the heads were suspended, and evi-

dently made for the purpose of *facilitating the habit of wearing* these heads attached to a loop around the neck of the victor, as demonstrated by *the hair being worn away by friction* around the edges of these perforations. Third, the irregular openings through the cranial walls, which are located in the right temples of both heads, are most probably battle wounds, for they differ in character from the other linear openings through the facial walls which have been made apparently for the purpose of extracting the inner parts, and afterwards closed by sutures. Likewise the conditions of the edges, and the tissues in the vicinity of these irregular openings, are indicative of such a supposition, as previously explained. Lastly, the color of the hair having been changed to the rufous hue, which is known to occur rather from the exposure to the weather than from the longest period of inhumation.

In reference to the resemblance of the curious appendages from the mummied heads to the Quippus of the Ancient Peruvians, as described by numerous authors, it seems to me that they are imperfect attempts to imitate the originals. The Quippus are said to have been composed of twisted wood, and consisted of large cords, which were the bases of the documents; to these base-cords were fastened threads, more or less fine, which were attached in a peculiar manner, and were knotted or intertwined in an established order, to express ideas, events, or numbers. The size of the Quippus varies; sometimes the base-cord is five or six yards long, at others it is not more than a foot; the pendent strings or branches rarely exceed a yard in length, but are generally shorter. The different colors of the threads have different meanings also; thus, red signifies war or a soldier; yellow, gold; white, peace; green, wheat or maize, etc. In the arithmatical system a single knot means 10; a knot doubly intertwined, 100; triply, 1000. Not only are the color and knots to be considered, but even the mode of twisting the threads, and particularly the distance of the knots from the base-cord, are important to a proper understanding of the Quippu. In every city of any note there was an officer styled Quippu-Camayoc, whose business it was at all times to knot and decipher these documents, and in course of time this became so perfect a science that those skilled in it attained to the art of expressing by knots historical events, laws, and decrees. But notwithstanding their skill, whenever a Quippu came from a distant province it was necessary that it should be accompanied by a verbal commentary sufficient to indicate at least the subject matter of which it treated, and the Quippus which related to the same subject were always preserved together in certain repositories, that there might be no risk of error by mixing or changing them. Repeated attempts made in modern times to read, the Quippus have proved failures, because of the difficulty of deciphering them without a verbal commentary to explain the subject matter of these documents. And this especially applies to those found in the "Huacas." Besides, the art or science of the Quippu language

appears to have been lost to a great extent by the modern Peruvian, although it is thought that there are still in the Southern Provinces of Peru, Indians who know how to decipher these intricate memorials, but they guard their knowledge as a sacred secret inherited from their ancestors. Now, in conclusion, I am disposed to think that the configuration of the lips, and the perforations through them, which no doubt date from the earliest history of the mummification, are indicative of having been produced by the attachment of a Quippu, which perhaps chronicled the history of the trophy; and that the degenerate descendant of later times, has in order to perpetuate the original tradition expressed by the lost Quippu, attempted to supply its place in the imperfect mode which his diminished intelligence dictated.—*American Medical Times.*

Letters from Prof. Charles A. Lee.

VENICE, Oct. 12, 1862.

VENICE, ITS PECULIARITIES, HOSPITALS, ETC.

"In Venice, Tasso's echoes are no more,
And silent rows the songless gondolier;
Her palaces are crumbling to the shore,
And music meets not always now the ear;
Those days are gone; but Beauty still is here.
States fall; arts fade; but Nature does not die."

Venice is a glorious place for cripples, for as all locomotion is by gondolas, there is no particular use for legs. Palmer and Bly would be at a discount here, and their polished specimens of artificial limbs, "better than the natural," would only serve as curiosities for the museums. How strange to find oneself in a city built on a hundred islands, where the only streets are canals, the only vehicles gondolas, where a horse was never seen except the brazen horse of St. Mark's, no wheeled carriage ever known, no rumbling of wheels ever heard; where the houses all stand in the water, and entering one seems like going on board a vessel, only there is no sea-sickness. "See Venice and die," seems to be the sentiment that animates all English, if not other travelers, and I must confess that it is a delightful place for those fond of novelty and not afraid of fevers, especially for a short period at the right time of the year. But I shall not apply for the consulship here, as I doubt whether I could ever feel exactly at home. I do not like to stop long in a place where every hour is a contradiction to my whole past existence; where I could never see a hill, or a mountain, or a wood, or an ear of corn growing, or green fields; or can hear a bird sing except in cages, or see an animal except in a menagerie; where there is no spring-water but what is imported, and no rain-water but an infusion of pigeon dung, and no artesian wells but are charged with

sulphuretted hydrogen and iron; where the one hundred and forty-six canals send forth a horrid stench during the autumnal months; two, at least, of the plagues of Egypt are endemic and perennial; to say nothing of the hungry swarms of mosquitoes, which complement the Italian sanguinary practice in a manner not soon forgotten. But then to counterbalance all this, Venice is undoubtedly the most picturesque city in Europe, and full of character and variety. But as the pleasure of sight-seeing depends chiefly on association, it is necessary to be well posted in Venetian history, to "read sermons" in the stones of its palaces and public buildings; and the traveler must believe also implicitly in every word of the "Merchant of Venice," so that when he stands on the Rialto he has a full conviction that he occupies the very spot where Antonio rated Shylock about his "monies and his usances," and where he "spat on his Jewish gabardine," and where Othello addressed the assembled senate. It requires no great stretch of faith to believe in the "Thousand and one Tales" after visiting St. Mark's on an evening; seeing its magnificent square in all its marble beauty; the domes and minarets of its old church; the barbaric gloom of the Doge's palace; its proud, towering campanile; its famous Corinthian houses; the bronzed lion of the Pireus, and the old "Bridge of Sighs;" walking in the illumination of its long line of cafés, observing the variety of costume, the thin veil covering the pale Venetian beauty; the Turks with their beards and caftans, and long pipes and chess-playing; the Greeks with their skullcaps and richly laced jackets; Jews, Armenians, Persians, Moors, Sclavonians, Russians, all in their native garb, to say nothing of French, German, English and American tourists; the whole presenting a combination of novelty and variety scarcely ever met with in any other city of the world.

There are great attractions here also for the epicure; beef of the finest quality furnished by the horned cattle of Styria; exquisite veal from Chioggia; the fattest of poultry from La Polisine di Rovigo; excellent game from the Maremma. (Snipes in winter at five sous each, and other things in proportion.) The Queen of the Adriatic is rich, too, in her piscatory treasures, her splendid large fat oysters, her magnificent roach and turbot, ortolans, sole, gudgeon, ling, tunny, pidocchi, mullet, roes in the form of caviar (bottarga), sardines, mackerel, lobster, etc., etc. There is also abundance of fine fruit here from the hills of Este, Monsilice, and Martagna, wines of the best growth of French and Spanish vineyards, and, as it is a free port, most other commodities at a cheap rate.

But the characteristic features of Venice are too well known to need further description; let us see what it has that deserves the particular notice of the medical man. And first its *hospitals*. In these I have been greatly disappointed, as they are vastly larger and better managed than I had supposed. The large Civil Hospital at Venice stands on the banks of one of the principal canals, near the church of San Giovanni e Paolo; it dates as far back as

1485, and consists of the magnificent buildings of the Scuola di San Marco, a religious order devoted to the care of the sick and poor of the city. The buildings are somewhat irregular, but very spacious, and were devoted to their present purposes after the fall of the republic. The whole establishment is capable of accommodating from 1500 to 2000 patients. The entrance is through a wide and high hall, with splendid marble floors and columns, beautifully carved wood ceilings and frescoes; and the wards, which are between one and two hundred feet long, with very high ceilings, are grouped around six large court-yards, in one of which is the sarcophagus of Marino Faliero, the decapitated Doge. There are sixty two halls or wards admitting of extensive classification. There are, for example, lying-in wards, syphilitic wards, fever wards, wards for diseases of children, for female lunatics, for ophthalmic cases, for medical and surgical diseases. One of the principal physicians conducted me over every part of the establishment, and explained everything minutely. In some of the wards there were four rows of patients, owing to repairs going on in the building. Still, I doubt not there were over 1200 cubic feet of space to every bed, owing to the great height of the ceilings. Every part was scrupulously neat and clean, and the utmost order and system everywhere prevailed. There are 1000 patients in the buildings, under the charge of 11 principal surgeons and physicians, 14 assistant surgeons, 16 sisters of charity, 8 apothecaries, 1 director or acting principal, and 1 director-general. There are two classes of patients, pauper and pay. Of the latter are three grades: 1, those supported by the district or commune to which they belong, who pay 55 cents per day; 2, a class of private patients who pay 40 cents per day; and 3, a superior class, who have better accommodations, and who pay 88 cents. In the court-yards are nine cisterns for rain-water, and one artesian well. This is forty-five metres deep, and the water has a taste of sulphuretted hydrogen. Children under seven occupy the basement, which struck me as very damp and unhealthy. The little patients all had a miserable, pale, sad and sickly look. The apothecary apartment, as in all Italian hospitals, was on a large and splendid scale, and admirably managed. The buildings are of two stories, and the whole thrown into large wards, one of which was devoted to cases of *pellagra*. All were extremely clean, quiet, and well ventilated.

The *male lunatic asylum of Venice (San Servolo)* is situated on an island in the lagune between Malamono and Lido. It is near the Armenian convent of San Lazare, where Lord Byron often resided, and is under the charge of monks of the order of St. John of God. Some of them have received a regular medical education at the University of Padua, as has also the superintendent, who is a very intelligent and capable man. The arrangement of buildings is similar to that of the civil hospital in the city. They are arranged around central courts, opening front along corridors, and the establishment covers the whole island. There are cells for the more violent and dangerous patients, containing two beds each,

while the epileptics or convalescents sleep in wards containing a large number of beds. The bedsteads are of iron, fastened to the floors, which, as well as those of the corridors, like those of nearly all Italian hospitals, are of polished concrete, hard and beautiful as variegated marble. The wards are high, wide, and well ventilated, and in winter are warmed by stoves. This institution does great honor to the city of Venice. It embodies most of the recent improvements in classification, and moral and physical treatment. No corporal restraints are used, unless padded rooms are so called, and it is very seldom that they are brought into use. In cases of active excitement, patients are generally confined to their cells. There are various workshops connected with the establishment, in which different trades and pursuits are carried on by the patients, as tailoring, shoemaking, carpentering, smith-work, etc. The kitchen work is also chiefly done by patients, under the direction of the chief cook. There are spacious exercising grounds adjoining, and elevated alcoves from which there are beautiful views of Venice, etc. In all respects this institution will well compare with the better class of English and French asylums.

The annual reports, which appear to be very accurately kept, show that the total number of patients for the ten years from 1849 to 1861 inclusive, was 3617, and the deaths 1178, giving a rate of mortality of 32·5 per cent. The mean number of patients during the last five years has been 343, and the mean number of deaths 75 per annum, being an annual mortality of 21·8 per cent. During the last five years the total number treated was 1314, the deaths 377, and the rate of mortality 28·7. Of this number, however, 411 were cases of pellagra, and the deaths in this form of insanity were 133, leaving a mortality of 27·02 per cent. for ordinary cases. There are accommodations for 360 patients in the whole establishment; the total number in 1861 was 567. Pellagra is a common disease in Italy, and it is very apt to be accompanied or followed by that form of insanity called melancholia. The officers are very civil and hospitable to strangers, and take great pleasure in answering all questions and showing all the arrangements. Intelligent zeal, humanity, kindness, and skill, are conspicuous in every department of the establishment. In both the hospitals above mentioned, a charge is made for the maintenance of the patient on the town or district in which he resides, if it can be ascertained; if not, the expense is charged to the municipality of the city. In both the only requisite for admission is, that the patient stands in need of medical assistance.

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Rome, Nov. 28, 1862.

The great hospital of *Santissima Salvatore*, which I visited next, consists of two piles of magnificent buildings, situated on opposite sides of the street leading from the Coliseum to St. John

Lateran. It was founded by Cardinal Colonna in 1216, and went under the name of St. Andrew until committed to the present confraternity, from which it derives its present appellation. This religious order, composed at first of twelve noble Romans, had charge of the chapel called *Sancta Sanctorum*, near the Lateran palace. The physicians in charge at the time were extremely civil to me, as they have been everywhere, and gave me every facility for seeing and investigating everything connected with the establishment. The hospital is chiefly for females requiring medical treatment, receiving patients of any religion, age, rank, or country. It has, also, a department for those suffering from sudden violent accidents, and a ward for aged females afflicted with chronic disease. It has about 600 beds, and its register shows a greater mortality than any other hospital in Rome, being upwards of 14 per cent. This high death-rate is doubtless owing partly to the insalubrious situation in which it is placed, and partly to its admitting so many aged persons afflicted with chronic and incurable complaints. The principal ward is an immense hall of large proportions, perhaps 300 feet long, and of proportional width and height; the windows, placed high above the floor on each side and frequently opened, allow of the most perfect ventilation. Its ordinary staff consists of two principal physicians and one principal surgeon, with two assistant-physicians and two assistant-surgeons, besides its attendants and dressers, twenty in number. Regular visits are made twice in the day, but physicians are always about the establishment, ready to give their services when wanted. A religious order, called *Cruciferi*, distinguished by a red cross on the habit, attends to the spiritual wants of the patients. In 1821 a community of *Sisters of Mercy*, who had dedicated themselves to visiting the sick in another part of the city, were transferred to this hospital by Pope Pius VII. The same order had important privileges granted to it by Popes Leo XII. and Gregory XVI. The vows of poverty, chastity, obedience, and hospitality, last only for a year, and are renewed at the end of that time; but when its members attain the age of forty they can make the vows perpetual. A large majority of the patients at the time of my visit were laboring under some of the forms of fever, malarious chiefly, but many were cases of typhus and typhoid. The treatment does not vary essentially from that pursued in similar cases in our own country, except that depletion, especially by leeches, is far more frequently practiced. A large fountain in the central court serves, not only for the preservation, but also the breeding and multiplication of the leeches.

What strikes an American as somewhat strange is to see so many religious women moving about from bed to bed, bringing food or drink to the patients, and soothing and comforting them by constant attentions, kind words, and spiritual ministrations. It is not uncommon to find patients in this hospital of very great age, several between eighty and ninety, and some between ninety

and one hundred, and not unfrequently centenarians. Two wards in this hospital are devoted to cases of tuberculosis or pulmonary phthisis, the average age of the patients being apparently between twenty and thirty. As this disease is universally regarded here as *contagious*, they are never mixed up with persons laboring under other diseases, but have separate rooms or buildings assigned them. Most of these cases are brought to the hospital late in the progress of the disease, many in the last stages, often probably for no other reason than that they may have the certainty of enjoying the consolations of religion in their dying moments.

One great recommendation of this noble institution is, that admission is freely granted to all who apply; no restriction, no red-tape, no certificate from a director or recommendation from a subscriber is necessary, as with us. The doors fly open to all who wish to enter; no preliminary examination even is required. Here is the patient, there a bed waiting for him; no hope delayed to make the heart sicker which was sick before. The religious, including nuns and priests, reside within the building, each having their own convent. The expense of supporting a patient here is about twenty-five cents per day. Once a year, on a particular Sunday, a grand procession of the Blessed Sacrament issues from the adjoining Church of St. John Lateran, and crossing the square, passes through the wards of the hospital, the Sacrament being borne by the Cardinal Arch-Priest of the Basilica, the Pope and all the cardinals assisting. The object of this procession seems to be to have a salutary effect on the sick and dying, and cheer them in their afflicted condition.

Besides the public hospitals at Rome already mentioned, there are several small institutions of a more private nature belonging to different nations and corporations; the Germans, Spaniards, Portuguese, Lombards, Florentines, and Lucchese, have each their separate hospitals. When the late Chevalier Bunsen resided in Rome as Prussian ambassador, he founded a hospital on the Monte Caprino, near the Capitol, for poor Protestants. This is supported by private subscriptions, and such of the patients as are able to pay a small sum for their support and medical attendance. The hospital is under the protection of the Prussian Legation, near to which it is situated. The sick ward forms a floor in a large building overlooking the Forum and the Palatine. Murray speaks of it as well deserving the support of Englishmen who visit Rome, "as the only one where poor British Protestants can be received without being subjected to the persecutions of friars and attendants in the other hospitals, to bring about their conversion to Romanism."

From a careful examination of the subject I am satisfied that there are few, if any, capitals in Europe where the hospitals are more numerous in proportion to the population, constructed on a grander scale, or endowed with more princely liberality, than in Rome. The annual endowment of these establishments is no less

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than 260,000 dollars, derived from lands, from grants, and from the papal treasury. Formerly administered by separate confraternities, the hospitals were placed by the French government under one general board, as in Paris, from which the best results were obtained; but of late years the ancient system has, in some degree, been restored, each establishment being placed under a separate direction, with a prelate at its head. Such a system is liable to abuses, especially jobbing, as we know from our own hospital experience, but it is difficult to hit upon any plan of management which is not open to some objections. Formerly they were ill administered and badly managed in their domestic arrangements. Considerable improvements have been introduced of late years, but especially since 1849, from diminishing the interference of the clergy and friars, and limiting it to its purely spiritual duties. The late accomplished Princess Doria made great efforts to introduce the French Sisters of Charity into this city, and succeeded to some extent, although opposed by many of the ecclesiastics connected with these institutions. It would not be just, perhaps, to place the Roman hospitals before those of Florence or Milan, but it is difficult to say wherein they are inferior. It is certainly a somewhat remarkable circumstance that, with such a wide field for anatomical and pathological investigation, the medical school of Rome is behind all the others in Italy, and has not produced a really great man, or even a medical work of superior merit, during the present century; nor is it less surprising that in this great city, the real capital of Italy, there is not a single medical periodical published, nor is there a medical society or scientific association of any description in this enlightened city of nearly 200,000 inhabitants. I have inquired of native Romans the reason of this, and have been answered that no secular societies or organizations are permitted here, on account of the danger of their being converted into political associations and used for revolutionary purposes. Whether this be the true reason or not I do not pretend to decide; but those who have resided here for some time as medical practitioners from other countries assure me that it is the true reason. Great credit is, however, due to the present Pope, for the deep interest he has always manifested in the hospitals, prisons, reformatories, almshouses, lunatic asylums, and educational institutions, in Rome. He has made additions to many of the hospitals from his own private resources; some he has entirely rebuilt. He has introduced many important reforms, has suggested and had carried out several new and improved arrangements, and has watched over them all with paternal care and solicitude. He has personally visited and inspected every hospital in Rome, and that, too, at times when his visits were wholly unexpected, so as to learn from his own observation their actual condition. During the prevalence of cholera he fearlessly went among it, visited the cholera hospitals, cheered the patients, encouraged the physicians and nurses, and did much to

allay the panic and dread of the disease universally prevalent, and dispel the idea of its contagiousness. If Rome is far behind other cities in many things, as she undoubtedly is, some allowance should undoubtedly be made for the present pontiff, who, with the best intentions and the most benevolent dispositions, is hampered by what he and his counsellors consider the political exigencies of the times.

The *Lying-in Hospital* of Rome, *San Rocco*, is connected with the Foundling Hospital, and consists of one great hall and several chambers, one of which is appropriated to births. It was originally established in 1500, with fifty beds, partly for medical and partly for surgical cases; it was, however, changed from its original destination and converted to its present purpose by Clement XIV. in 1790. It has at present from thirty to forty beds, each bed having a curtain and screen, so that the occupants are not seen by the others. All who apply are received without any questions being asked; some with their faces covered with vails which they are not required to remove. On the register they are only known as guests at a hotel, by their number. No one is allowed, unless by special permit, to enter the hospital, except the physicians, nurses, and attendants. Many are received at a consierable period before their confinement, so that their condition may not be suspected by their friends. If able to pay a small sum they have superior accommodations; and when they are well enough to leave the institution they pass out by a passage in the rear, through an unfrequented street, and thus escape all danger of detection. If they wish to reclaim their children at some future time, some distinguishing mark is put upon them. But the children generally are sent to San. Spirito. Usually patients are received only a few days previous to delivery, and they remain on an average about one week after confinement. It is supported partly by its own revenues and partly by the State, like the other public institutions of Rome. Whatever objections may be raised by some against the secret policy pursued in this institution, I am satisfied both of its expediency and wisdom, as it leaves open a path to moral and social redemption which a different policy would close for ever. It is a course dictated alike by wisdom and humanity, and no one can justly charge its managers or the State with encouraging vice or immorality, for they act on the well known and admitted principle that the great object of human laws, as well as human institutions, is the reformation rather than the punishment of the offender. A woman may recover character and self-respect if she has a fair chance to make the experiment; but what chance has she who is once known and publicly branded as unchaste and the mother of illegitimate offspring, to say nothing of the wretchedness entailed on the child, or the temptations to infanticide?—*Amer. Med. Times.*

Report of Sixty Cases of Hospital Gangrene, treated by ALFRED NORTH, Acting Assistant Surgeon at U. S. A. General Hospital, Frederick, Md.

Hospital Gangrene is a species of moist Gangrene or Phagedena, which is characterized by the rapidity of its progress and by its infectious nature; in a mild form it occasionally makes its appearance in civil hospitals, but it is in overcrowded and in ill-ventilated apartments that it is more commonly met with, and it is here that its true character can be most correctly and thoroughly studied. This disease made its appearance in this hospital about the middle of October. For the preceding three weeks the beds, floors, and even the greater part of the grounds had been occupied by the severely wounded from the battle-fields of South Mountain and Antietam (September 14th and 17th, 1862). The two barracks in which the disease first made its appearance were erected for the temporary occupation of the Provost City Guard, and from necessity used for hospital purposes, in order to accommodate the great number which was daily arriving. The floors were so slightly elevated from the ground as not to allow of the free circulation of air beneath them, and the windows so arranged that they could not be opened without blowing directly upon the beds, and even when this mode of ventilation was attempted the windows were frequently closed by the patients, especially at night, when fresh air was most needed. The utmost attention was paid to cleanliness before and after the outbreak of the disease. Every man was furnished with a new sponge, which was frequently and thoroughly washed and kept in view at the head of his bed; the soiled dressings, as soon as removed, were taken from the ward; regular inspections were made by the medical officer of the day, and by a reliable night watchman. Sixty-five patients were allowed to each barrack, which gave six hundred and twenty cubic feet of air to each patient. The commencement and progress of hospital gangrene, for a time, were very insiduous; the open wounds, instead of cicatrizing rapidly as they had previosly done, began to assume a sloughy and unhealthy appearance; this was especially noticed in patients occupying corners of the wards. Erysipelas and pyæmia also prevailed to a considerable extent, and minor operations were frequently followed by disastrous results. Thus, a disease which at first was but a simple sloughing ulcer, became one, the very name of which was, and continues to be, a word of terror to every wounded man in the hospital.

As soon as hospital gangrene was clearly recognized as such, the patients affected were immediately transferred to a tent fitted up for the purpose, and placed under my care; in this way sixty cases of the disease came under my observation during the last three months. It usually attacked ulcers that had nearly cicatrized. My attention was usually first called to them by the com-

mon, and I might almost say universal expression—"Doctor, I have a burning pain in my wound, and it is growing much larger." Upon examination the edges of the ulcer were found thickened, indurated, undermined, and jagged in appearance, the surrounding areola of a dark purple color, and the surface of the ulcer covered with a grayish exudation; if this was allowed to go on without treatment, or only simple dressings, for two or three days, extensive destruction of tissue, as of the calf of the leg or on the muscles of the buttock, would take place, leaving behind a disorganized pultaceous slough, exhaling a peculiar stench, which, when once recognized, could never be mistaken. The concentric development spoken of by most writers upon this subject, especially Guthrie and Blackadder has not been noticed here, except in very mild cases. The extension of the disease, for a time, seemed confined principally to the cellular tissue along the course of the muscles, the sheaths of which were finally stripped off, then the fibers of the muscles themselves were involved. The large nerves and arteries were the last to yield to the onward march of the disease; but these in time would give way (see Case No. I.) if the progress of the disease was not limited by the application of nitric acid. In this way I have seen good dissections made of the posterior portion of the thigh and the calf of the leg. There are two characteristics always peculiar to this disease in which it differs from all other forms of gangrene, the one its peculiar odor or stench, and the other its depressing influence upon the mind; the former was noticed in fifty-three cases, and was so marked that it could be recognized upon my hands during all the day after handling the diseased parts, although disinfectant liquids were freely used. The latter characteristic existed among our patients here to an alarming extent, and constituted a great embarrassment to successful treatment. In one ward, accommodating eleven patients, there were, during two months, ten upon whom this mental depression was so great that they gave up all hope of recovery, and, wishing to shorten their time of suffering here, tried in various ways to procure poison from the nurse. This mental disturbance was recognized by M. Delpech in his treatise upon this disease, but he ascribed it to the misfortunes and sufferings of the French army. Guthrie, in speaking of it, says, "there existed a morbid dejection, or apathy, which could scarcely be removed, and on which, in very bad cases, no impression could be made. In others the humane solicitations of the medical officers have failed against the influence of oppressive gloom amounting to despair; expectation and hope seemed to be exiled from their minds by the dominion of painful despondency, which, prevailing in melancholy disorder, seemed uncontrolled or checked by the intrusive importunities of the present or the consciousness of a future existence."

The following case well illustrates the destructive nature of the disease as well as its influence upon the mind:

S. D. Mabry, private, 6th Ala., æt. 22, admitted October 22,

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1862, with two flesh wounds on right side of chest, and a compound comminuted fracture of right leg at about its middle. He had been wounded at the battle of Antietam, Sept. 17, 1862. Both wounds continued to do well up to November 10th, when that of the side took on a sloughy action. For two days previously he had experienced a burning pain in which it prevented sleep at night. It was then observed that the surrounding areola was livid, and that the ulcer had assumed a circular form, with jagged, indurated, and everted edges, with its base covered with a gray tenacious slough. The ulcer was dressed with oakum, saturated with Labarraque's solution of soda, and tonics administered internally. Nov. 15.—By this time the patient's general health began to be affected; he complained of loss of appetite, pyrexia, and occasional chills; the ulcer had extended to a moderate degree superficially, with but little change in its character. He was removed to-day to gangrene tents, the undermined edges slit up in various places, and strong nitric acid applied to the ulcer and also to the surrounding healthy tissue; was ordered tartrate of iron and potass in xv. grain doses three times a day. Nov. 20.—Two applications of the acid had sufficed to arrest the disease, and the ulcer had cleaned off and was granulating healthily; general condition much improved, and patient was removed from the gangrene tent. Dec. 9.—Four days since (the wounds of the side cicatrizing rapidly) well marked symptoms of hospital gangrene presented themselves in the suppurating wound of the leg, which, in the attack previously noticed, had been progressing favorably. Patient was again removed to gangrene tent, and nitric acid applied to the gangrenous tissue, which presented the same characteristics mentioned before in its first appearance. The following is a note made of the case: Patient's general condition very poor; mind much dejected and filled with gloomy forebodings; pulse 140 and very weak; entire loss of appetite, etc. The disease is making rapid progress, having involved and destroyed almost entirely the soft parts upon the posterior and inner aspect of the lower third of the leg, exposing the bone for about four inches. It was observed that at the first the integument, cutaneous nerves, and sheaths of the muscles were destroyed; and now the muscles themselves and the largest arteries and nerves are becoming involved, and are being converted into a blackened, disorganized pulpy mass, exhaling a peculiar stench which can be recognized in every part of the tent. In the upper portion of the leg, and also about the ankle-joint, the disease has not invaded the muscles themselves, but merely dissected them out and involved their sheaths. The whole limb to the body was much swollen, œdematous, and painful on pressure; severe burning pain was also complained of. To such an extent had the disease progressed that the question of amputation of the thigh was broached, several operations having been performed for the disease in other of the city hospitals without its recurrence in the stump. It was, however, decided to try the efficiency of the acid

application. Patient was accordingly etherized, and all of the sinuses resulting from the extension of the gangrene among the muscles freely laid open, and the pultaceous slough removed with scissors and spatula, after which strong nitric acid was mopped on and then worked in by a sharpened stick. The application of the acid was also made to the adjacent healthy parts, this having been of service in limiting the extension of the disease. On recovering from the effects of the anæsthetic, ordered fifteen drops Magendie's solution of sulphate of morphine; brandy and beef-tea, each half an ounce every half hour. Dec. 22.—Patient's general condition has much improved. Is now quite cheerful, pulse 125 and gaining in strength; appetite returning, surface pleasant, etc. Very little if any shock followed the application of the acid on the 19th. The slough has separated, revealing a healthy granulating surface. The lower part of tibialis anticus, the inner portion of the gastrocnemius and soleus muscles, have been destroyed by the gangrene, together with the middle third of the anterior tibial artery and nerve; acid re-applied to several points where the disease had not been entirely checked, followed by dressings of oakum saturated in hydrochloric acid, half an oz. tincture of opium, 3 oz., water one pint. Feb. 9, 1863.—From the last date patient's condition has steadily improved, and the ulcer remaining from the result of the gangrene had granulated, cicatrized, and progressed so favorably, that there was decided prospect of saving the limb, when the disease, a few days ago, started again, and made its way through the muscles on the posterior aspect of the lower portion of the leg, and following the tendons behind the inner malleolus bored its way through the sole of the foot ere it was recognized. As before, the track was laid freely open, and nitric acid applied with a successful result, arresting the disease. Feb. 20.—Improvement since last note has been continuous both generally and locally. The ulcer remaining involves the entire posterior aspect of leg and side of foot to the great toe, and is closing rapidly. The subsequent history of the case shows that about March 1st erysipelas set in, and amputation of the leg near the tuberosity of the tibia was performed, with fatal results. No union of the fragments had taken place, and the ankle-joint was found to have been involved.

Case II.—Confederate, admitted September 21, 1862. He was slightly wounded in calf of right leg by a shell, and did well up to November 4th, when it commenced sloughing, with undermining, induration, and eversion of the surrounding skin. A burning pain in wound was also experienced; slight constitutional symptoms were present, with loss of appetite, irritative fever, etc.; no odor perceptible. Patient was etherized, wound laid freely open, and nitric acid thoroughly applied, followed by a yeast poultice. Ordered, tartrate of iron and potass, 2 drachms, water, 4 oz.; half an ounce to be taken three times a day. The ulcer after operation measured seven inches in length by four inches in breadth. Nov.

5.—Slough was removed this morning, some portion being cut off with scissors; gangrene appeared to be almost entirely arrested, but to some sloughy points nitric acid was re-applied; poultices and tonics continued. Nov. 8.—It was found that the disease was still progressing underneath the skin at various points. These sinews were laid freely open and nitric acid thoroughly applied; irritative fever slight. Nov. 10.—Gangrene is apparently arrested, the ulcer remaining is of large size, extending from heel to popliteal space, and has invaded the integuments of the whole calf of the leg, the base being formed by the remains of the gastrocnemius muscle. The slough has separated, and the granulations abundant throughout the whole extent of the ulcer; general condition improving. Dec. 3.—The wound, which had been granulating healthily up to within a few days since, has again been invaded by hospital gangrene, which has made rapid progress. Today it was found to have extensively undermined the skin, and had proceeded along the sheaths of the muscles of the leg. A large sinew upon the outer aspect of limb was freely laid open by an incision extending from the middle of the leg to the external malleolus, the sloughing tissue removed by scraping, and nitric acid applied by means of a pine stick. The insinuation of the disease among the muscles rendered the thorough application of the acid very difficult. The burning pain, the induration and eversion of the edges of the ulcer, with constitutional excitement, etc., are present. Takes tonics and stimulants, and locally as a wash, Acid. hydrochloric, ½ oz., tincture opium, 3 oz., water, one pint. Dec. 23.—The application of acid mentioned at last date materially checked the progress of the disease, but at several points between the muscles repeated application became necessary. The disease starting at another point when checked in one place, resembles at times a serpiginous ulcer. Whenever the fibrous tissue became involved it was noticed that the disease became less amenable to treatment. The tendo-achillis has been almost entirely destroyed, only a small portion remaining, which was carefully preserved. The sloughing had involved also a large portion of the muscles of the calf of the leg, and had extended from a short distance below the knee to the ankle. The general condition has been kept up by good diet, etc. Jan. 15, 1863.—The ulcer remaining was about the size of a silver dollar and rapidly cicatrizing. Notwithstanding the loss of tissue patient is regaining, to a very great degree, the use of his foot.

The evidence of the infectious nature of hospital gangrene has been abundant. In one instance, after making a digital examination of a wound, I noticed that the cuticle upon my finger had been injured by a sharp spiculum of bone: no more was thought of this until a few days after, when I was awakened at night by a burning pain in my finger, which extended up the forearm to the shoulder; this was soon followed by a headach, and a generally dull, uncomfortable feeling; the strong nitric acid was freely ap-

plied with a stick to the abraded surface, which was now inflamed and very painful. After two applications of the acid the pain almost entirely disappeared, and no further trouble was experienced.

All of the nurses, with one or two exceptions, were attacked in the same way, but the disease with them was not so easily limited, because energetic treatment was not soon enough adopted.

Case No. III. illustrates the contagious nature of the disease, as the nurse attendant upon patient, as well as the one occupying the adjoining bed, was *attacked by the disease.*

Case III.—Langford, Confederate, wounded in the groin at the battle of Antietam. On examination upon admission into the hospital, it was found that the femoral artery had been injured at a point about one inch below Poupart's ligament, and that an aneurism had resulted from it. This was operated upon ten days after by Dr. R. F. Weir, surgeon in charge, who tied the external iliac in its lower third. The operation was successful, and in two weeks the wound had nearly healed, when it took on an unhealthy action, and patient then complained of a burning pain in it. Anticipating what was coming, he was immediately moved to a stone building where there had previously been no gangrene; and here, November 21, he came under my care. He remained here four days before the disease became sufficiently developed to justify his removal to the gangrene tent. November 25.—Patient is very desponding, and is growing weaker day by day; has considerable headach; pulse 120, and almost imperceptible; tongue furred, brown, tip and edges red and dry. The ulcer, which is three inches in width, extends from the pubes up nearly to the anterior spine of the ilium; has an unhealthy and sloughy appearance. Patient complains of a slight burning pain in the wound, the edges of which are everted, jagged, and undermined for about two inches; the integument is indurated and tumefied, and extremely sensitive to the touch or the least movement of the limb; characteristic odor not well marked. The sinuses extending under the integument were freely laid open, and the surface of the ulcer scraped with a spatula, to which the acid was first applied with a mop, and then worked in with a stick, so as to get it down to the comparative healthy tissue, and was also applied in a similar manner to the tissue surrounding the ulcer, and in this way destroy both the cuticle and cutis vera, and thus limit the extension of the disease. Superficially antiseptic poultices were applied, and opiates given to relieve pain; takes half an ounce of brandy and beef-tea every half hour. Nov. 26.—Although the pain following the application of the acid was so severe as to cause slight convulsions for a time, patient is feeling better to-day. Pulse 108 and gaining in strength. Fearing that the progress of the disease had not been entirely arrested, the acid was again thoroughly applied. Takes stimulants and tonics, with fifteen grains of tartrate of iron and potass three times a day. Nov. 28.

—The black, charred slough has separated, revealing a healthy, granulating surface beneath. The extreme sensitiveness of the touch, together with the induration and swelling of the surrounding parts, has almost entirely disappeared. Applied oakum saturated with acid wash to the ulcer. Dec. 5.—Patient represents himself as feeling much better; mind hopeful and cheerful; appetite good; ulcer is cicatrizing rapidly. Continue stimulants and tonics. Dec. 15.—All unfavorable symptoms have disappeared, and patient is regarded as convalescent.*

The nurse attending upon patient before his removal to the gangrene tent, and the patient occupying the adjoining bed, to whose stump Longford's sponge, by mistake, was once applied, were both attacked by the disease, and were under treatment for a month in the gangrene tent.

Until 1813 hospital gangrene was generally considered as a constitutional affection, but the indifferent success which attended its treatment as such during the Peninsular War led European surgeons to regard it more as a local affection. In sixty cases of hospital gangrene which have come under my observation, in only seven cases were the local manifestations preceded by constitutional symptoms. In forty-seven cases constitutional symptoms followed the sloughing, and in six cases there were none during the entire course of the disease, thus showing fifty-three cases in support of its local nature. Again, in twenty cases the patients had other wounds besides those affected with the disease, and in eighteen of these the unaffected ulcers continued to cicatrize healthily while the disease was rapidly extending in the others. Messrs. Blackadder, McLeod, and Taylor, regarded the disease at first as a purely local affection; while Mr. Coate, who observed the disease in St. Bartholomew's Hospital, is disposed to give it a constitutional character, although he recognizes a stinging pain as the first symptom of the disease.

From the local symptoms having so generally preceded the constitutional, and from the power of the acid in arresting the disease, as well as from the condition of unaffected wounds, hospital gangrene, as seen here, was regarded as a decidedly local affection, capable of giving rise to severe constitutional disturbance.

The pain in fifty cases was described as burning or stinging, and in ten cases it was not observed. The odor which Guthrie regards as pathognomonic was noticed in fifty-three cases; in the seven remaining cases, in which it was not recognized, the disease was of a very mild type. The circular form also spoken of by the same author, and regarded by him as of equal importance, was seen in but few cases.

With one exception no cases of recent wounds were attacked by the disease, although operations were frequently being performed.

* For two months after this date the patient was up and about the ward, when secondary hemorrhage, following sloughing of the sac, supervened, and in four days resulted fatally.

It seemed to choose by preference nearly cicatrized ulcers, principally those situated upon the lower extremities: these formed three-fourths of the whole number of cases, those on the body one-sixth, and on the upper extremities one-twelfth. Its occurring so much more frequently upon the lower extremities may be accounted for by the fact that patients having wounds upon these parts were more likely to be confined to bed, and thus prevented from free access to fresh air. The predilection of the disease to attack wounds of exit rather than of entrance, as noticed by McLeod in the Crimean war, has not been seen here.

Having previously regarded hospital gangrene as a constitutional affection, nothing but simple local applications were at first applied, in connection with constitutional remedies; but, finding that this would not limit the extension of the disease, the following course was adopted, which proved so successful that but little change was made in it during the prevalence of the disease in this institution: As soon as the affection was recognized the patients were immediately removed from the barrack to a tent fitted up for the purpose, where fresh air could be plentifully supplied. Ether being administered, the sinuses were freely laid open, and the wound enlarged, if necessary, to expose all of the affected parts. After having removed the pultaceous slough with the scissors, the surface of the ulcer was scraped with a spatula, and nitric acid applied with a mop and worked in with a sharp stick. In a similar manner it was then applied to the surrounding comparatively healthy tissue, which would limit superficially, for a time at least, the extension of the disease, and relieve almost instantly the burning pain. If the case was very urgent, instead of waiting two or three days for the slough to separate, it was forcibly removed, or, more correctly, dug away, and a fresh application of the acid made. One application was not always sufficient, especially if the disease was working among the tendons or underneath deep fasciæ; antiseptic poultices were applied until the slough began to separate, when the following lotion was substituted: acid. hydrochloric., ½ oz.; tincture opium, 3 oz.; water, a pint. The constitutional treatment adopted consisted of the use of brandy and quinine, with fifteen grain doses of tartrate of iron and potass three times a day.

The average number of applications of acid in the sixty cases was six, maximum twenty. The average length of time required to limit the disease and restore healthy action to the ulcer, two weeks; maximum, six weeks.

Notwithstanding that concentration of the disease, so to speak, was in a great measure prevented by scrupulous attention to cleanliness and ventilation, and the removal of all patients, as soon as attacked, to a tent, and the transfer of others to general hospitals, the disease continued unchecked for nearly four months.

In only one case was it directly the cause of death, and in only three, where the disease was present in a mild form, did it contribute to a primary affection in bringing about an unfavorable termination. Nor has it been followed by pyæmia, which is said

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to be of frequent occurrence, or by secondary hæmorrhage, although the middle third of the posterior tibial artery was destroyed in one case, and the brachial and femoral arteries laid bare in others.

The absence of pyæmia and secondary hæmorrhage I have thought to be due to the free application of the strong acid, and have accordingly applied it or some other mineral acid to all unhealthy wounds in my barrack, and for six months have not had a single case of pyæmia, although previously it was of frequent occurrence.

May it not be that these two allied diseases, hospital gangrene and pyæmia, depend upon a poison, perhaps of an animal or septic origin, in the wound, which a dilute mineral acid, used as an injection, has the power to destroy, and thus prevent systemic affection?

No microscopic examinations were made here for want of proper conveniences.—*Amer. Med. Times.*

Diseases of the Respiratory Organs in Children. A Lecture by the late C. VAN ALEN ANDERSON, M. D., Physician to Children's Department, Demilt Dispensary, N. Y.

CROUP.

At our last meeting, gentlemen, we studied the nature and consequences of unexpanded and of collapsed lung, and of the different forms of coryza. We found that the first produced death, not by disease, but by a non-fulfillment of a vital function; and that the second—an inflammation of the mucous membrane—proved fatal through an interference with the nutritive processes, or else by a directly lowering influence upon the general system. To-day, I propose to bring to your notice a complaint which affects the larynx and trachea—which shuts the door of the respiratory apparatus against the life-giving air, and kills by the cruel process of suffocation; in other words, CROUP, or cynanche trachealis. It is, as you know, a peculiar form of laryngitis, occurring most frequently in children, and distinguished by the formation of a false membrane in the air passages.

Its history is interesting. But by the word history I do not mean the description of the disease itself alone; I mean also the first recognition of it by medical men, the various opinions that have been promulgated, and discoveries that have been made in relation to its nature, and the numerous steps that have been taken one after another until we have acquired our present really imperfect acquaintance with it. It seems to me that this kind of knowledge should be more cultivated by us; for we have arrived at that stage of our science when it becomes apparent to the dullest that medicine is yet in its infancy; that wonderfully illimitable, unexplored fields lie before us; and so, by sometimes looking back

to the point from which we started, and comparing our utter ignorance then with the glimmer of light that we have now, we may gather fresh courage for more brilliant discoveries in the future.

Croup appears to have been known, in a dim, confused way, to the most ancient medical writers. Hippocrates makes a brief, indistinct mention of a disorder that has been thought by some to be this disease. A more faithful description is found in the works of Aretæus of Cappadocia, a physician who practiced in Rome between the reigns of Vespasian and Adrian. Many passages are exceedingly graphic, as for instance the following picture of the last stage: "The pallid or livid countenances of these patients assume a sad expression, while the tonsils are pressed together. When they lie down they rise up again that they may assume a sitting position, not enduring a recumbent position; but if they are sitting up, wanting rest, they are again forced to lie down; and many of them standing upright, walk about, for they are unable to remain quiet. Inspiration is great, expiration truly small. There is hoarseness, and want of voice. These signs rapidly grow worse, when suddenly they die in collapse." Artius, an Alexandrian, who flourished about four centuries later, while using the words of Aretæus, added to them many comments and particulars which render it beyond doubt that in his day the disease was well known, and was the same that had been mentioned by the Roman writer.

The next mention of croup appears at the end of the sixteenth century, in the works of Baillou, of Paris, who was the first to dwell on its anatomical characters. In the winter of 1576 it prevailed extensively at Paris, carrying off both children and adults, among the latter Baillou's father-in-law. He was therefore interested to a great degree in discovering its true nature, and the treatise, supported by clinical testimony, which he published, has since been extensively quoted, as affording the first scientific observations of modern times.

Whether it was that attention was really first drawn to this disease by Baillou, or whether, like some maladies of more recent periods, it then began to extend its influence more widely, and to penetrate more deeply into the various strata of human life, this much is certain, that since his time frequent and severe epidemics of croup have been observed by medical authorities. I am myself inclined to think that the disease did in fact become more widely diffused in the sixteenth century. The ancients were quite as keen in their remarks upon disease as we moderns are, and, indeed, many of our most successful remedies were anticipated by them—take, for example, the proposal of Artius to cure aneurism by ligation of the affected artery, an operation which it required so great a genius as John Hunter to revive: or take the accurate observations upon pathological conditions which are found in the works of Hippocrates, the very father of medicine—and it seems to me that they could hardly have overlooked a disease so distressingly fatal, and so distinctly marked in its various symptoms and stages, as croup is among us, had it prevailed then as generally as it does now

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Moreover, many of us—not only those who have been in practice many years, and who are therefore entitled to guide us by their wisdom and experience, but also younger members of the profession —have seen diseases, for a long time confined to one country or one district, suddenly taking up their line of march like a conquering army, and seizing upon all known parts of the civilized world. I need not go back to the history of syphilis first appearing at the siege of Naples, and thence extending to all regions of the earth; nor need I refer to Asiatic cholera, starting from the East, crossing continents and oceans in its progress, and leaving its first traces everywhere, so that every year we have a greater or less number of sporadic cases; for, when I mention diphtheria, you will recognize a distemper that within the last four years has assumed the character I mention; that has become a native of England and of America, in both of which countries it was before to a certain extent unknown. Why croup, therefore, should have remained quiescent before, and should have spread only since the time of Baillou, I do not understand; but that it has done so appears to me not by any means improbable.

Next it made its appearance in Spain, and prevailed there for many years. It received in that country the name of *garotillo*, because those who were attacked by it perished as if they had been strangled by a cord. Mercatus, the physician of Philip II. and Philip III., published his observations upon it under the title of *consultations*. He remarks upon it as the most serious disorder he had ever witnessed, and is astonished at the rapidity with which it destroys life, and at the disproportion between the real danger and the appearance of the disease. Another Spanish physician also, who wrote twenty years later, does not differ in his estimate of it.

In the month of June, 1618, croup was first seen in Italy, in Chiaia, a market-town of Naples. Many children were destroyed by it, very much to the alarm of the doctors who had never seen it before. It was considered to be a consequence of infection rather than of contagion, and was ascribed to the exhalations which escaped from the ground after the earthquake of 1616; but its strangulatory nature was still insisted on by all who were brought in contact with it. There was one remarkable point about it, namely, that it first seized on the lower animals who kept their muzzles nearest the earth, then on children in the succeeding years. At the same time, or shortly afterwards, there were epidemics of croup at Palermo and at Messina.

Since that period frequent descriptions of croup have been brought before the world. Ghisi in 1747 gave an exact account of the epidemic which showed itself at Cremona in the month of May of that year. He dwells particularly upon the fatal nature of the disease, and gives a faithful picture of the sufferings of those who perished by it; moreover, he makes mention of the case of a little girl, who expectorated a tubular false membrane some moments before dying, and of finding in the trachea of another child opened

after death, a similar formation. Treatises were written upon it by Starz, in 1749; Middleton, in 1752; Bergino, in 1755; Berghen, in 1759; Wahlbom, in 1761; and Wilcke, in 1764.

The name of *Croup* was first proposed for this affection in 1718 by a Scotchman, Dr. Blair, of Cupar Angus; and a valuable essay, drawn from original observations, describing the disease with accuracy, and proposing tracheotomy for its relief, was published at Edinburgh by another Scotchman, Dr. Home, in 1765. He was succeeded by several writers in quick succession, one of the ablest of them being Dr. Samuel Bard, of this city, a founder of the New York Hospital, and an illustrious member of the medical faculty of Columbia College (Prize Essay by Albers, of Bremen, in 1805).

Attention was more particularly called to the true nature of croup in consequence of two memoirs read before the French Academy of Medicine in 1821, by M. Bretonneau, of Tours. An epidemic of the disease known since the time of this distinguished man as diphtheria, attracted his earnest and anxious study of its phenomena. It is unnecessary to enter into a full account of his researches, though the reasoning by which he reached his conclusions displays great talent. After having conclusively shown the existence of a disorder characterized by the effusion of false or mucous surfaces, and before his time confounded with malignant sore throat, he attempted to prove its identity with croup. He did indeed triumphantly demonstrate that, when the pseudo-membrane of diphtheria extends to the larynx and trachea, it produces exactly the same symptoms as any false membrane in the same situation, and cited many cases which firmly sustain his position. But after the publication of his views in 1826 there were many and vigorous protests against croup and diphtheria being considered the same disease, not only by English writers, but also by continental authorities. Bucheteau was the first, I believe, to raise his voice against the sweeping assertions of the physician of Tours, which he did in the same year 1826; and he was followed by Dr. Abercrombie in a treatise on an epidemic which prevailed in Edinburgh, and in which a clear distinction was made between diphtheria and croup—and by others in whose works the same difference was insisted upon.

I will not weary you by an account of the various opinions, *pro* and *con.*, which have been urged for the last thirty years. I shall content myself with stating that the distinction between the two diseases is now, as far as my information goes, clearly recognized; at any rate, that among American physicians diphtheria is not croup, but only a secondary form of it; and, therefore, I shall draw your attention to the diphtheritic inflammation, merely as a modification of the disease.

Croup is one of the most alarming and fatal maladies that curse humanity, and numbers various distinguished victims. The brother of the present Emperor of France was destroyed by it, his sad and sudden death producing numerous valuable works upon the disease in consequence of the offer of a prize by Napoleon I.

General Washington is claimed by Bretonneau as one among the numerous martyrs to the diphtheritic form. Any one who reads our weekly bills of mortality will discover its frequency, and the danger that attends its presence. Generally it attacks children between the ages of one and twelve years, but oftenest those under five years of age. It has been seen in an infant of eight days old, in one of three months, and in one of eight months. It appears from the fifth report of the Registrar-General of Great Britain, that while 1022 out of 98,391 deaths in London took place from croup, 1013, or 99·9 per cent., occurred before the age of fifteen, and 879, or 87·8 per cent. before the age of five years. Of twenty-six cases which Dr. West has recorded, twenty five occurred in children under five years, and twelve in children under two. Andral gives the following table of ages in 332 cases: He found it during the first month in 1 case, during the third month in 1 case, during the fifth month in 1 case, from five to twelve months in 18 cases, from one to two years in 61 cases, from two to three years in 45 cases, from three to four years in 54 cases, from four to five years in 42 cases, from five to six years in 29 cases, from six to seven years in 29 cases, from seven to eight years in 3 cases, from eight to eleven years in 6 cases, from eleven to fifteen years in 7 cases, from fifteen to thirty years in 13 cases, from thirty to fifty years in 10 cases, from fifty to seventy years in 12 cases.

In Philadelphia, during the two years preceding 1845, 475 deaths are reported from croup in infants between two and five years, 238 in those between one and two years, 319 in those under one year, 112 in those between five and ten years, and 6 in children over ten years.*—*Amer. Med. Times.*

On the Specific Gravity of Urine as a Measure of its Solid Constituents. By EDWARD NICHOLSON, F.C.S., Staff Assistant-Surgeon.

Rules have been given to find, from the specific gravity of human urine, the quantity of solids or of urea which it contains. Dr. Golding Bird's rule for ascertaining the solids of the urine was to multiply the excess of specific gravity over that of water by 2·33; and Mr. Haughton, in his valuable investigations, "On the Constants of the Human Urine," states that the quantity of urea bears a very simple relation to the specific gravity. But some experiments I have been making on the subject are far from confirming these results; and when the sources of the urinary constituents are considered, it will be seen that such a simple ratio between the specific gravity and the urea would be very unlikely to occur. If the solids of the urine were solely the result of tissue-metamorphosis, and the mutual proportions of the different constituents were constant, these rules would be perfectly applicable. But the solids of the urine are not solely the result of tissue-meta-

* Condie, Dis. of Chil.

morphosis, but also of many accidental circumstances; and the mutual proportions of many of the constituents are far from constant. The sulphuric acid of urine being nearly all derived from the disintegration of nitrogenised tissue, its quantity is in very constant proportion to the urea, while phosphoric acid, being mainly produced by the disintegration of the organs of the nervous system, is often independent of the urea. I have seen the phosphoric acid fall to less than one-tenth of its normal proportion to the urea, while the sulphuric acid remained as usual in constant proportion. Another disturbing element is the chloride of sodium. This salt follows no law in its proportion in the urine, and its erratic course affects most considerably the specific gravity.

The line given by Mr. Haughton as representing the urea in urine of gradually increasing specific gravity, was of a very trifling curve; it formed the arc of a large circle, cutting the specific gravity-line in two points, but for practical purposes corresponding to it very closely. It will be seen in the following table, that the ratio of the specific gravity to the urea is totally irregular, and that none of the rules given would give the smallest approximation to the amount of urea; and this is true whether the urine of one individual or of several be taken, and whether the subjects be in health or in disease. As I had long been in hopes that some simple ratio existed between the urea and the specific gravity, I took especial care, in the analyses I performed, to note with accuracy the specific gravity of the urine. To this effect, all the determinations of specific gravity were made by the balance: for I find that urinometers, even of the best construction, give an error amounting often to ·002. The fifty-two specimens of urine given in the Table form the totality of my analyses, in which urea and chloride of sodium were determined; many other analyses (made for pathological inquiry), in which only one or other of these substances was determined, have been rejected. Owing to the occurrence of several cases under my care, in which the specific gravity was very low, I am enabled to show a considerable range of specific gravities. The individuals, whose urine has been analyzed, were ten in number, two of whom were healthy adults, the others were patients in the General Hospital, Fort Pitt.

I will distinguish them as follows:—

A.	Disease—Intermittent fever	4	observations.
B.	do. Chronic dysentery	8	do.
C.	do. Anæmia	1	do.
D.	do. Enlarged liver	11	do.
E.	do. Enlarged spleen.....	12	do.
F.	do. Paralysis.....	1	do.
G.	do. Albuminuria (slight)	3	do.
H.	do. do.	1	do.
I.	Healthy	10	do.
K.	do.	1	do.
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	Specific gravity.	NaCl per 1,000.	Urea per 1,000.		Specific gravity.	NaCl per 1,000.	Urea per 1,000.
1. A	1001·14	·85	4·	27. E	1013·94	6·	21·5
2. B	1003·34	3·1	4·5	28. E	1014·34	7·4	19·
3. B	1004·54	3·5	9·	29. D	1014·5	6·8	21·4
4. B	1005·38	4·	10·	30. E	1015·	7·2	21·
5. B	1005·64	4·35	8·	31. E	1015·16	8·2	21·5
6. B	1005·94	4·5	8·5	32. H	1015·26	4·8	27·
7. B	1006·38	4·5	9·5	33. E	1015·8	7·	24·5
8. B	1006·86	5·5	7·5	34. I	1016·2	10·	21·
9. C	1007·	2·5	7·2	35. D	1016·34	8·1	20·5
10. D	1008·	4·	10·	36. D	1016·46	6·8	22·5
11. A	1008·44	4·2	12·	37. D	1016·86	8·7	20·5
12. E	1008·5	3·6	12·5	38. E	1017·34	6·	27·
13. A	1009·	2·05	15·5	39. I	1017·9	8·1	25·5
14. B	1009·38	6·3	13·5	40. E	1018·	7·5	28·
15. D	1009·6	4·8	14·5	41. E	1018·14	7·2	26·
16. D	1009·7	5·2	12·5	42. I	1018·94	7·	28·
17. A	1009·7	9·7	12·	43. I	1019·64	10·	24·
18. E	1010·22	4·6	16·	44. K	1019·78	10·5	22·5
19. E	1010·44	5·2	15·	45. E	1020·84	7·6	32·
20. D	1010·64	4·6	15·	46. G	1021·2	5·	37·5
21. D	1011·3	5·1	16·7	47. I	1021·3	11·7	32·5
22. F	1012·5	5·4	16·	48. I	1022·06	12·1	33·
23. D	1012·54	5·8	18·5	49. I	1023·02	7·6	31·5
24. G	1012·74	4·6	18·5	50. I	1024·4	8·	34·
25. G	1013·	4·4	18·5	51. I	1026·8	9·9	37·
26. D	1013·68	5·5	19·5	52. I	1027·	8·3	38·

The influence of chloride of sodium over the ratio of urea to specific gravity cannot fail to be remarked. In the specimens of equal specific gravity, a slight variation in the quantity of chloride of sodium is accompanied by a considerable fluctuation of urea in the inverse direction. The great influence which chloride of sodium thus possesses over urea is explained by the fact, that, whereas a solution of chloride of sodium of sp. gr. 1010 contains 14 per 1000 of the salt, a solution of urea of the same specific gravity contains 35·6 parts per 1000. This fluctuation, as exemplified in the series 27 to 34, is often very regular, and in many cases it is sufficient to add to the specific gravity the difference between it and the chloride of sodium, to obtain the urea within 5 per cent. of error; but in many cases the error may amount to as much as 20 per cent., the amount obtained being below the real number in dilute urines, above it in concentrated specimens.

It is evident from these results that determining the specific gravity only of the urine is of no good for calculating the amount, either of urea or of solids excreted; but that, by taking into consideration the amount of chloride of sodium (which can be determined in two or three minutes by a standard solution of nitrate of silver), the quantity of urea may, within certain limits, be calculated for clinical purposes. However, the necessity of an accurate

determination of specific gravity renders it far more advisable to put aside all inexact methods, and proceed at once to the volumetrical estimation of urea.—*Jour. of the Chemical Society* (London).

Foreign Body in the Auditory Canal. By D. B. St. John Roosa, M.D., New York.

A soldier standing guard before the hospital-tent of a regiment, suddenly felt an insect passing into his ear, and a sensation of pain, causing vertigo, and compelling him to be relieved from his duty. On examination of the ear, as well as the imperfect means allowed, no aural speculum or sunlight being at hand, the presence of a small bug was thought to be ascertained. This was done by one of the hospital attendants, and he attempted to remove it by means of forceps and other dangerous implements. Only more pain was caused, when I was sent for, and ordered the ear to be syringed for fifteen minutes with warm water. This relieved the pain, and the insect was thought to be removed; but as the operations were carried on by the light of one candle, it was somewhat difficult to decide certainly. External otitis resulting from the lodgment of the insect, it was treated by applications of warm water to the auditory canal and membrana tympani; during the acute stages, by counter irritation over the mastoid process, and later on, with a mild lotion of plumb. acetat, applied to the membrana tympani. Ten days after the supposed lodgment of the insect, during one of the applications of warm water by means of a syringe, the bug, as it proved to be, passed out, of course long since dead. A slight otorrhœa existing, and the patient having also an ulcer of the leg, on the moving forward of the regiment, I was obliged to leave him at a General Hospital, and hence lost sight of the case.

This case is unsatisfactory from various reasons. The absence of aural specula, which should be in each regimental instrument-case, and my inability to get one made to answer the purpose, prevented a full examination of the auditory canal at the beginning of the case, the only possible time for a satisfactory one, the subsequent external otitis preventing any certain diagnosis as to the presence of the bug.

The application of the forceps to attempt its removal was decidedly wrong, for that instrument should very rarely, if ever, be introduced into the ear for the removal of foreign bodies. Its use is almost certain to excite inflammation, and that of a dangerous character. We should beware of probes, forceps, *et id genus omne*, in our treatment of the ear.

The application of warm water, filling the external ear completely with it at frequent intervals, I consider, with the aid of leeches applied on the tragus in extremely acute cases, the very best alleviator of the terrible pain which is one of the evidences of

acute otitis. It is much to be preferred to the application of poultices, which are more apt to lead to such relaxation of the parts as to cause suppuration, and is more convenient and clear. As far as I know Dr. V. Tröltsch, of Wurzburg, Germany, was the first to recommend this remedy as particularly adapted to quieting pain in the ear.

The application of a steady and comparatively large stream of water is the only certain and safe way of removing foreign bodies, such as peas, beans, buttons, insects, which may be inserted or find their way into the ear.—*American Medical Times.*

An Estimate of the Extent to which Human Life has been Prolonged or Abridged by Ovariotomy (prepared by E. H. JANES, M.D.),

Was recently the subject for discussion in the Royal Medical and Chirurgical Society of London, introduced by Dr. Robert Lee, who examined the tables published by Dr. Clay in 1860, comprising 567 cases, of which 242 were considered successful, 235 died from the direct effects of the operation, leaving 90 cases concerning which no information is furnished whether life was prolonged or abridged. From this analysis, and the number of unpublished unsuccessful cases he has succeeded in collecting, Dr. Lee "considers it demonstrated that ovariotomy is an unjustifiable operation where the life of the patient is not in immediate danger, and where there is not a great probability of the life of the patient being saved by the removal of the disease." He further stated that his attention had been early called to this subject by a fatal case in which a fibrous tumor of the uterus had been mistaken for a tumor of the ovarium, and removed. He had carefully examined every case of ovarian disease that came under his observation, the result of which was that he believed it impossible in any case to determine before actually laying open the abdomen what the condition of the viscera was, and hence it was not justifiable to perform such a dangerous operation at a venture.

Mr. Macilwain thought more accuracy in diagnosis was wanted, that the disease should be studied from the laws of general pathology, and that the danger of removing the ovary had been exaggerated. He agreed with Mr. Spencer Wells that the after-treatment, repose, was the Alpha and Omega. Mr. W. had given him the addresses of twelve patients on whom he had operated, ten of whom he had seen, one a young woman from whom Mr. W. had removed a tumor weighing forty pounds, and who was now, with the other nine, quite well. From this he felt convinced that the question of ovariotomy was worthy of most serious consideration, and should not be the subject of mere hostile interchange of opinions; that the facts required could not be gathered by a single person,

however large his experience, but that by vigorous action of the Society enough facts might be accumulated in a few years from which more definite conclusions could be drawn. To this end he suggested that the council issue a series of questions for the collection of information concerning these operations.

Mr. Baker Brown felt extremely obliged to Dr. Lee for bringing this subject so frequently under discussion, for the greater the investigation the greater the elimination of truth. He had frankly published every unsuccessful case in his own practice, and he believed as a rule other ovariotomists had done the same. He had performed the operation fifty-three times during the past twelve years, and the result had been twenty-nine recoveries and twenty-four deaths. The mortality in his practice of late had been very much less than during the first years, there having been in the thirty-one operations performed in the London Surgical Home only ten deaths, and only four in the last fifteen operations there and in private practice. He believed it to be the most dangerous operation ever performed; that he never advised a patient to have it performed, but, after having placed all the facts before her, he left her, assisted by her friends, alone to decide; and although easy of performance, the complications are often of the most serious nature. He considers the most important part of the question that of diagnosis; and although he had devoted more than thirty years of his life to the careful study of the subject, and had paid special regard to the question of diagnosis, he unhesitatingly affirmed, that there were no rules that could be laid down so absolute as to enable any surgeon to diagnose with perfect certainty before operation. He therefore hoped Dr. Lee would continue to devote his powers of mind to the solution of this difficult problem, believing that by so doing he would do more good service, and strengthen the hands of the operating surgeon, than by any attempt to discourage ovariotomy. He had, ten years before, operated on his own sister, who recovered, and since married, and had recently given birth to her fifth child; and if occasion offered, he should follow the same plan in any one near and dear to him, believing the operation justifiable, and entitled to be recognized as a legitimate one in surgery.

Dr. Tyler Smith said the peculiarity about ovarian disease is, that, beyond the material abstracted from the system, it is only injurious by mechanical pressure. It does not otherwise threaten life. He therefore did not think it right to operate until the health began decidedly to give way, without waiting until the health was so completely broken as to destroy the chances of the success of the operation. By so doing we run far less risk of peritonitis than by operating when the patient is in robust health. The only evil of delay is the possible formation of adhesions; but even these do not greatly diminish the chances of success. By acting upon these principles he has been successful in twelve out of fifteen cases; and he has only made one error in diagnosis, in which the disease was cancerous tumor of the mesentery.

Mr. Spencer Wells and Mr. Charles Hawkins both spoke in favor of the operation when guided by the principles advocated by Mr. Tyler Smith; and both urged the adoption of Mr. Macilwain's suggestion.

Notwithstanding Dr. Lee's incredulity concerning the propriety of this operation, it has certainly been more successful in this country, as will appear when the subject is brought before the New York Academy for discussion.

Dr. Charles Clay has given to the *Obstetrical* Society of London some statistical observations on ovariotomy, in which he stated that he had performed 109 peritoneal sections, of which 104 were for ovarian extirpation, three for cutting down upon the tumor to establish ulceration where its removal was impracticable, one for Cæsarean operation, and one for the removal of both uterus and ovaries. Of the 104 ovarian cases, 72 recovered, 32 died; all the ulcerative cases recovered; the Cæsarean section lived to the fifteenth day; and the case of the entire removal of both uterus and ovaries recovered. Of the 32 deaths, 10 died from the immediate effects of the operation, 10 from inflammation, 10 from prostration, and 2 from hæmorrhage.

He attributes much of his success to the raised temperature of the room for the operation. He values chloroform highly, but would not employ it if the woman could face the difficulty without it. He operated fourteen times before chloroform was discovered, and nine recovered. He attributes the distressing vomiting in a great measure to the use of chloroform, as he saw but little of it in the fourteen cases where it was not used. For the relief of this he recommends patience until the blood has got rid of its carbon, simple drinks, and as little food as possible. In all cases the length of the incision was commensurate with the tumor to be extirpated, he preferring a large incision to a small one.—*Amer. Medical Times.*

Two Successful Cases of Ovariotomy. By W. H. Byford, M.D., Professor of Obstetrics, &c., Medical Department, Lind University.

Case I.—Mrs. H., aged 38 years, has been gradually increasing in size with ovarian dropsy, for the last four years. She first observed a small tumor in right iliac region. Before removal, it filled up the pelvis and abdomen, until the patient was as large as if at full term of pregnancy. Her suffering for several months had been very great, on account of impaction of the pelvis, and her general health was rapidly deteriorating. The tumor was multilocular; and with its contents, weighed nineteen pounds.

The operation for its extirpation was performed in presence, and with the assistance of Drs. Shumway, Cheeney, Davis, Bevan

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and Jones. An incision between three and four inches in length in the linea alba, about equal distances from the umbilicus and pubis, enabled us to draw off the contents of the numerous cysts with the trochar, and extract the whole tumor with great facility and dispatch. The pedicle was transfixed by a needle carrying a large double hempen ligature, and tied in two parts firmly as I could draw the twine. The wound was closed by three silver pins, the lower of which was passed through the middle of the pedicle, so as to confine the cut edge upon a level with the skin of the abdomen. I should have mentioned, that after being tied, the pedicle was divided between the ligature and the tumor with the knife. When the tumor was first exposed, there were within view, ramifying over its surface, a number of large veins, several of those were larger than a goose-quill. The pedicle was large and fleshy, showing several large venous trunks. There were no adhesions anywhere; and the only obstacle to a ready removal of the tumor, when lessened by evacuation, was caused by a cyst that completely filled up the cavity of pelvis. It was so completely moulded into the inequalities of that cavity, that some force and address in manœuvering were requisite to lift it out. The wound was covered with a water compress, and the abdomen encircled with a broad woolen binder. The operation and dressings were finished in eighteen minutes, after the patient was completely under the influence of chloroform. Dr. Shumway, whose patient she was, and to whom much credit is due, for his assiduity and skill in the after management of the case, kept full and accurate notes; they are highly interesting on several accounts, and will be read with profit by those who are studying the subject. They are subjoined:

Operation was completed at 3 o'clock and 33 min., October 29th. 4 P. M., vomited once a little water; pulse 76; complains of smarting pain at seat of wound, and severe pain in the bowels: "like the pain of colic;" ordered tinct. opii. gtts. 40. 6 P. M., much more comfortable; says that she has not a particle of pain in the right side, but complains of pain in the left hypogastric region and down the left thigh; pulse 88, full and soft. 6.30 P. M., pain continuing, gave tinct. opii. 30 gtts. 8.30 P. M., still complains of severe pain in left hypogastrium and thigh; pulse 88; gave tinct. opii. 40 gtts. 11.30 P. M., patient easier; has slept, with a few minutes intermission now and then, since 9 P. M.; pulse 88, as before. 12 P. M., return of pain; gave tr. opii. 30 gtts. Thursday, 30th, 3 A. M., used catheter at patient's request; comfortable; pulse 88. 9 A. M., pulse 90, full and soft; complains of return of pains in the left thigh; gave tinct. opii. 30 gtts. 12 M, complains of thirst, otherwise very comfortable; ordered *ice, ad libitum;* repeat tr. opii. 30 gtts. 3 P. M., symptoms unchanged; relieved bladder with catheter; tinct. opii. 30 gtts. 5.30 P. M., no change, patient comfortable. 9 P. M., patient cheerful; ordered tr. opii. continued every three hours if she is restless, or complains

of pain. Friday, 31st, 8.30 A. M., found patient comfortable; has slept at intervals during the night; pulse 90; skin cool; does not complain of pain, except a slight smarting at the seat of wound; cath. 8.30 P. M., finds patient feverish; pulse 100; countenance anxious; skin dry and hot; very restless and irritable; much troubled by secretion of mucus in the trachæ, with desire to cough; slight fullness of the abdomen; had taken 40 drops tinct. opii. at 4 P. M., ordered 40 drops more, as she was still unable to pass water; her bladder was relieved by use of catheter. 10 P. M., less bronchial irritation; continue tr. opii. 30 gtts. every three hours. Saturday, Nov. 1st, 8.30 A. M., more comfortable; pulse 96, softer and fuller; has slept at intervals during the night; tympanites increased; ordered em. terebinth; continues tr. opii. 12 M., considerable tympanites; complains of pain in the bowels with desire to go to stool; upper part of the wound looking well; slight phlegmonous inflammation about the pedicle; pulse 100; continue em. terebinth and tr. opii. 6 P. M., tympanites increased; but less tenderness over the abdomen than there was last night; more cheerful; pulse 96, soft and full; gave 5 grs. calomel; continue em. terebinth and tr. opii., with b. c. soda. Sunday, Nov. 2d, 8.30 A. M., found patient cheerful; she says that "she is almost well, and meant to have had her clothes changed before the doctor came;" nurse was engaged making her toilet; ordered all operations of that kind to be suspended; pulse 100; tympanites increased, but no tenderness over the abdomen; continue em. terebinth, tinct. opii. and *perfect rest.* 4 P. M., found patient much worse; was taken soon after we left in the morning with severe pain in the left hypogastrium; pulse 128, small and quick; skin hot and dry; tympanites or flatulence much increased; gave tr. opii. 40 gtts., and ordered enema of

Ol. Terebinth	℥ss.
Ol. Ricini	℥i.
Yolks of 2 eggs	
Gruel	Oj. M.

6 P. M., enema retained; gave another of soap-suds, which brought away a large amount of gas, but no feculent matter; pulse 120; pain subsided; abdomen tender; wound looking tolerably well; union appears firm at the upper part; considerable phlegmonous inflammation about the pedicle; ordered the em. terebinth and tr. opii. continued every three hours, and one grain sulph. quina to be added to each dose, and the abdomen covered with a poultice of flax-seed meal, after being rubbed with ol. terebinth; care being taken not to get any of the oil into the wound; gave fl. ext. rhei. and senna, ℥ij. Monday, 3d Nov., 8.30 A. M., patient rested tolerably well through the night; pulse 116; abdomen very much distended; wound firmly united at the upper part, but looking unhealthy about the ligatures; cut the ligatures, and removed two of the needles; a serous discharge followed the withdrawal of the

needles; ordered beef-tea and milk-punch freely; pinned a bandage tightly around the abdomen; she does not complain of pain upon pressure; repeat fl. ext. rhei. et. senna. 12 M., abdomen enormously distended; patient restless; pulse 120; gave enema, which brought away a large amount of gas, which much relieved the distension of the abdomen; repeat the rhei. and senna. 6 P. M., pulse 120; distension very great; applied adhesive-straps to support the wound; complains of no pain or tenderness; bowels have not moved; ordered enema, which only brought away a discharge of gas; gave 12 grs. calomel. Tuesday; 4th, 8.30 A. M., bowels have not moved; pulse 116; only complains of the distension of the abdomen; ordered bot. citrate magnesia. 2 P. M., the bowels not having moved, gave enema of ol. terebinth, which produced a free movement of the bowels, with discharge of a large quantity of gas, almost entirely relieving the abdominal distension. 5.30 P. M., patient expresses herself as "almost well;" pulse 108; skin cool; ordered injection, repeated in three hours if the bowels do not move again in the meantime; continue milk-punch and beef-tea, and give tinct. opii. 30 gtts., after the bowels move again. Wednesday, 5th, 9 A. M., the injection last evening produced a complete collapse of the abdominal wall; patient slept nearly all night—is very comfortable this morning; pulse 106; no pain, no tenderness, except at seat of wound. 5 P. M., improving steadily. Thursday, 6th, 8.30 A. M., pulse 100; no unpleasant symptoms; wound around the pedicle discharging freely; takes considerable nourishment. Friday, 7th, same as above. Saturday, 8th, removed the remaining needle which transfixed the pedicle—ligature firm. Sunday, 9th, wound looking well; patient looking and feeling very well; appetite good.

Case II.—I was called, Nov. 5th, 1862, to see Miss P., aged 20 years, at Eleroy, Illinois, suffering with ovarian dropsy. There had been nothing remarkable in the condition of her health, although of rather spare and fragile form, until February last, when she first observed a tumor almost the size of an orange, in the right iliac region. Her menses ceased to make their regular appearance about the same time. The tumor had grown quite rapidly; and she had suffered for several weeks severely from pressure. At the time of examination, she seemed larger than most women at full term of pregnancy. The patient was examined by, and in consultation with, Drs. L. A. Mease, B. J. Buckley, F. W. Hance, E. C. De Puy, and John Charlton, of Freeport, Dr. R. Hays, Lena, and Dr. J. A. Darling, of Eleroy. It was unanimously decided that the tumor was multilocular, and as it had grown so rapidly, and the patient had begun to suffer from its great size—she could not long survive, if not relieved—that extirpation was the only means of cure advisable, and that owing to the probabilities of a large portion being solid, and the existence of adhesions, the chances of success were less than ordinary. The conclusions of the consultation being submitted to the patient; with a heoric

determination, which I think had much to do with her recovery, she begged us to give her what she considered the only chance of escape from a lingering and sure death. With the assistance of the above-named gentlemen, the operation was performed in the following manner: After anesthesia was induced by chloroform, an incision in the linea alba, midway between the umbilicus and symphisis pubis, about two inches long, exposed the tumor and evacuated several pints of peritoneal effusion. Upon introducing the finger to survey the tumor, some slight adhesions were torn through. A large trochar was next plunged into one of the presenting cysts, as no fluid flowed out of the canula, it was withdrawn. Attached to it was a thick glutinous semi-fluid, that was so tenaceous as to admit of being drawn into a string, two feet long. It was evident that the contents of these sacs could not be thus evacuated. The external incision was enlarged until it was about five inches in length. The abdominal walls pressed closely against the tumor; a free incision made into the cyst, and the contents, almost as thick and dark as tar, pressed out. The same procedure was repeated upon several sacs, until the size of the tumor was considerably decreased. Upon drawing the partially collapsed tumor forward, and examining its sides, firm and extensive adhesions were discovered in every direction in which the examination was pushed. Much of them gave way under the fingers, by using considerable force; there were, however, firm bands of fibrin, from two to three fingers wide, two of them were far around toward the spine, which, on account of their firmness, had to be separated by the ecrasseur. The external wound was again enlarged upward, until it was about nine inches in length, and the tumor lifted out of the abdominal cavity. After passing a double hempen ligature through the centre of the pedicle, and securing it by tying each side firmly as possible, the chain of the ecrasseur was passed through it, close to the tumor, and above the ligature. Owing to the careful attention of the gentlemen present assisting, very little of the contents of the sacs, and, probably, no blood found their way into the abdominal cavity. The external wound was now closed by four pins and several silver sutures. The stump was transfixed, and retained in the wound with its surface even with the external surface, by the pin nearest the pubic extremity of the cut. I should have before stated, that the great omentum which lay on the upper part of the tumor, was adherent throughout the whole extent of contact, but these adhesions were so feeble that they gave way under pretty smart force exerted by the fingers for the purpose.

Very little blood was lost; and the patient bore this terrible operation without any appearance of shock or depression whatever. The time occupied in completing the operation and dressing, was forty-five minutes. A compress wet with water was placed over the wound, and secured by a broad flannel binder. The tumor with its contents weighed 30 pounds. After witness-

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ing the extensive adhesions, peculiarity of contents of the tumor, etc., all present joined in expressing the opinion that recovery was hardly to be thought of as a possibility. It will be noticed, that in these two operations, although as great care as practicable—on account of the difficulties of the case—was observed in avoiding extravasation or effusion in the peritoneal sac, no effort by sponging or wiping among the intestines, was made to remove any substance that did escape. Such was the case also in the first operation I ever performed; and I cannot but express the conviction, that the amount of ovarian fluid should be very considerable or acrid in quantity, to justify the rough operation of sponging it out. The notes of the case, after the operation, were kept and forwarded to me by Dr. J. A. Darling, of Eleroy, and I have not altered them, believing them to be a faithful exhibit of the progress toward a cure. Although somewhat lengthy, they show but one interesting circumstance, which is, that "our patient" recovered from the effects of the operation without a single bad symptom:

Operation finished Nov. 5th, 12.30 P. M.; pulse feeble, and 120 per minute; countenance pale; nausea and vomiting from effects of chloroform; complains of pain in back; took teaspoonful of tinct. opii. 2.30 P. M., nausea continues; less pain in back; lies on side, disposed to doze; pulse 120, good volume; natural color returning to face; respiration 40 per minute. 5 P. M., pulse 112, full and soft; resting well; respiration 40 per minute; complains of pain in back; some thirst; took teaspoonful of tinct. opii., which was immediately rejected; 7 P. M., pulse 104; nausea; skin cool, soft and natural; ¼ gr. morphia, which was immediately rejected; complains of pain in back; slight desire to urinate, which was relieved by catheter; has slept some last two hours. 8 P. M., pulse 120; more urgent nausea, otherwise comfortable; ¼ gr. morphia immediately rejected. 8.45 P. M., ½ gr. morphia retained. 10 P. M., ¼ gr. morphia; some restlessness. Nov. 6th, 2 A. M., ¼ gr. morphia; dozing. 5 o'clock, has slept some; ¼ gr. morphia; pulse 125; desire to urinate, relieved by catheter. 8 A. M., pulse 118; skin cool, soft and natural; ¼ gr. morphia; some nausea. 10 A. M., ¼ gr. morphia. 11 o'clock, pulse 120; inclined to doze. 1 P. M., skin moist; breathing good; pulse 120, and soft; 1.15 P. M., removed bandage—wound looking healthy; no pain or tenderness; desire to urinate, relieved by catheter; pulse 108; 1 gr. opii. (Tilden's preparation); skin soft and cool; no nourishment taken. 3 P. M., took a little crust coffee. 3.45 P. M., 1 gr. pill opii., with crust coffee for drink; inclined to doze. 5 P. M., pulse 120; complains of back, otherwise comfortable. 5.30 P. M., 1 gr. pill opii.; complains of occasional shooting pains in abdomen; pulse 129. 7.15 P. M., 1 gr. pill opii. rejected. 7.30 P. M., 1 gr. pill opii. retained; inclined to doze. 8.45 P. M., 1 gr. pill opii. 10 o'clock, relieved bladder by use of catheter. Nov. 7th, 6.30 A. M., have given through the night 1 gr. pill opii. every hour and a

quarter; patient has rested well; skin cool; respiration natural; has no pain, except in back.

Nov. 9th. Our patient, thus far, is exceeding our most sanguine hopes. I will continue notes as taken from my book:

Nov. 7th, 3 P. M., pulse 120; tongue, some dry and red at tip, with thirst; no nausea. 5 P. M., saw patient with Dr. Charlton; commenced the use of ess. beef, which relishes well; removed bandage—wound looking well; have decreased the opii. to 1 gr. every four hours; tongue dry and slightly coated. Nov. 8th, 3 A. M., patient resting well; tongue more natural; pulse 135. 7 A. M., pulse 130. 10 A. M., removed bandage—wound looking good, with very slight suppuration; pulse 130; commenced the use of Tilden's f. ext. veratrum viride, 2 min. every two hours, continuing 1 gr. opii. every four hours; patient cheerful and happy; continues use of beef ess. and crust coffee; tongue moist. Nov. 9th, 8 A. M., have continued above treatment through the night—patient rested well; slight sweating when sleeping; complains some of flatus; gave 3 gr. carb. soda; pulse 110, with all other symptoms favorable; have discontinued use of verat. viride. I would here state that I have emptied the bladder regularly. 5 P. M., saw patient with Drs. Buckley and Charlton; removed bandage—wound looking healthy; slight suppuration—healing mostly by first intention; pulse 120; tongue moist; skin cool. Nov. 10th, 7 A. M., patient has rested well through the night; pulse 120; tongue slightly dry; has no pain; have given through the night opii. as usual, with verat. viride every four hours; patient feels well and cheerful—thinks she has grounds for hope that she will recover; there is but slight distenton of abdomen.

Nov. 12th. Our patient is prospering finely; thus far everything looks favorable for a recovery. Her pulse, this morning, is 84; tongue moist and clean; the only disagreeable symptom is wind in the bowels. I moved them yesterday, and shall give another injection this morning. I have continued treatment with opii. and verat. viride, the same as at first, also anise-seed tea. I am giving her all the nourishment she will take, in a liquid form.

Nov. 14th. Our patient is still doing well, has no fever, nor any unpleasant symptoms. I have moved the bowels: I used simply an injection of soap-suds, with a little turpentine. She begins to eat toast and some roast potato, with a good supply of beef essence. The wound is looking well. The superior one-half is entirely healed. I have removed one pin and two sutures, shall remove one pin to-day. I have continued treatment same as formerly.

Nov. 17th. Our patient is gaining as fast as could be expected. The wound is healing gradually, the superior one-half is entirely closed, the other is suppurating some. I have removed two of the pins and the three sutures, the others I shall allow to remain for a few days. I am treating her now with opium and quinine, 1 gr. each, every four hours. Her pulse is about 110 per minute, soft;

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tongue clean and good; skin soft and moist; and all appearances favorable. We have strong hopes of a recovery; I am giving her plenty of nourishment.

Nov. 19th. Our patient is gaining as fast as we could hope for —she begins to have an appetite for food. I am continuing treatment with opium and quinine; the wound is healing slowly. I have not removed the two lower needles, but the stump looks well. I have moved her bowels with injections about every other day, they have moved once without any medicine whatever. I see nothing to hinder a favorable termination.

Nov. 22. DEAR SIR:—Your favor of the 19th was duly received. I will first answer your questions. 1st. There has not been any hemorrhage whatever from the stump or wound. 2d. There has not been any distention of the abdomen at any time of any account, she only complained one day of flatus.

She is now getting along as well as could be asked for: has a good appetite, feels cheerful, and says she wants to sit up. I have removed three of the pins; I thought it was best to allow the lower one to remain for a few days, yet the stump is about on a level with the abdomen. I am giving her quinine with reduced doses of opium.

February 14th. Both patients have completely recovered from the operation, and are in good health.—*Chicago Med. Examiner.*

Clinical Lecture on Rheumatism. Delivered at St. George's Hospital. By HENRY WM. FULLER, M.D., Physician to the Hospital.

Another class of cases which abound in our wards, and always pass under the name of rheumatism, are those characterized by circumscribed pain and swelling of the periosteum. The patients are always cachectic, and are commonly persons who have suffered from syphilis, or have had their systems saturated by mercury. The periosteal swelling makes its appearance in those parts especially where the bony framework is thinly covered by integument; and thus nodes, as they are termed, are often found on the tibia, the ulna, the cranium, the clavicle, and the sternum. At the commencement of the disease the affected part becomes swollen, puffy, and tender on pressure; but after a time the puffiness subsides, and firm, irregular, painful elevations or projections remain, which are exquisitely tender to the touch. So prominent are they in some instances that the eye alone suffices to detect them, and even when this is not the case they may be easily discovered by running the fingers along the bone. They vary in size, as in prominence, roughness of surface, and tenderness; but they are usually of an inch or an inch and a half in length, sufficiently tender to be a constant source of pain and annoyance, and prominent enough and

rough enough to be detected on the most cursory examination by those who really search for them.

An excellent example of this form of disease has been under your observation in the person of M. W——, aged forty, who was admitted into the Fuller ward on January 11th, 1862. This man had been suffering from pains in the limbs for above eighteen months, and although he positively denied having had syphilis for nearly seven years, his pains were manifestly connected with a venereal taint. He had had sore throat and purulent discharge from the nostrils; and a large, firm, and tender node existed on the right tibia. His complexion was sallow, his tongue was clean, his bowels were regular, and his urine was acid and clear. He had not had a good night's rest for many weeks in consequence of the pain. I gave him the ordinary diet of the hospital, with a pint of porter; and prescribed the following medicines: ten grains of iodide of potassium, and ten drachms of cinchona draught, three times a day. At the same time I kept applied to the painful spot a rag dipped in a lotion composed of five grains of bichloride of mercury, six drachms of compound tincture of iodine, two ounces and a half of glycerine, and five ounces of distilled water. Within ten days the pains were much relieved and the periosteal swelling was subsiding. On the 31st, being quite free from pain, he was permitted to leave the hospital.

Another instance of the same form of disease was admitted at the same time into the Queen's ward, in the person of M. A. P——, a married woman, aged twenty-five. She had contracted the malady in America, and for two years had suffered severely from pains in the limbs, which medical treatment had hitherto failed to relieve. Since she was first attacked she had twice had inflammation of the eyes, and had lost the sight of the right eye, and she had also become deaf—effects which she attributed to the "rheumatism." As a child she had scarlatina, and the year before last the lower extremities were anasarcous for a period of three months. On admission to the hospital, she was cachectic in appearance, her complexion was pale, her skin cool, and tongue clean; the bowels were regular; the urine was pale, acid, albuminous, specific gravity 1006. The catamenia had been absent four months, but she was not pregnant. Large tender nodes existed on the scalp and forehead, there was considerable effusion into the capsule of the right knee, and there was opacity of the right cornea over the pupil. The heart's action was regular, and its sounds were clear. I gave her the ordinary diet of the hospital, with a pint of porter; and prescribed the following medicine, namely: ten grains iodide of potassium, two drachms of solution of bichloride of mercury, and ten drachms of cinchona draught, every six hours. On the 17th slight ptyalism was coming on, and therefore the solution of the bichloride of mercury was omitted; the other remedies were continued, and, as she was restless at night, ten grains of Dover's powder were given at bedtime; five ounces of gin were also ordered. Gradually the pains subsided, the nodes disappeared, and she left

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the hospital quite free from suffering on the 9th of February, or at the expiration of four weeks from the date of her admission.

Now these two cases are fair examples of this form of disease, of the consequences to which it gives rise, and of the treatment calculated to get rid of it. Wandering pains in the limbs, occasional effusion into the capsules of the joints, inflammation of the eyes, inflammation of the periosteum—leading, if neglected, to disease of the bone beneath—are some of its ordinary effects; whilst deafness, headache, and convulsions resulting from the pressure of nodes formed on the internal table of the skull, are some of its less frequent complications. Its characters, when fully developed, are so strongly marked that you can scarcely fail to recognize them; and when once recognized, the treatment is exceedingly simple. The patient is cachectic, and therefore must be supported; whilst bark, iodide of potassium, and, if necessary, a little biniodide of mercury, are given, to rid the patient of his malady. Perhaps there is no form of disease in which relief is obtained more speedily or more certainly, if due care is taken to sustain the patient's strength during the administration of the remedies. But if the character of the disease be overlooked, so that proper medicines are not prescribed, or if the patient be not properly supported, no form of malady is more intractable. Baths of all kinds, alkalies, colchicum, guaiacum, sulphur, and other so-called anti-rheumatic remedies, are absolutely useless. The pains not only continue unrelieved, but gradually progress from bad to worse, until structural disease of the bone has been set up, and the mischief is probably irremediable. In both the cases which I have brought before you treatment had been had recourse to, at longer or shorter intervals, for a period of eighteen months, and the patients were worse at the expiration of that time than they were at the commencement of the attack; and yet within one month from the first adoption of appropriate treatment they were perfectly free from pain.

In both these cases, and in many others which you have noted under my charge, I have made use of the biniodide of mercury. In the first it was employed as an external application; in the second, as a remedy administered internally. But I would have you remark, that in neither instance did I prescribe the biniodide as such, but formed it extemporaneously by the addition of iodide of potassium to the bichloride of mercury. My object in so doing was to obtain the remedy in a soluble, and therefore in an active form. Biniodide of mercury, as you are doubtless aware, is a scarlet powder, insoluble in water, and, like all other insoluble matters when taken into the stomach, is uncertain in its action. Much larger quantities of it must be administered than would be needed if we could make sure of its being absorbed; and whilst in some instances we fail to obtain the desired results, in others profuse salivation is induced in consequence of a large proportion of the remedy having found its way into the system. But biniodide of mercury is rendered perfectly soluble in water by an excess of iodide of potassium; and thus, whether employed externally or

internally, the certainty and energy of its action are much increased; smaller doses will fulfill the object we have in view, much greater reliance can be placed upon its action, and its operation can be regulated with the greatest nicety. The contrast between its effects in the two forms is so striking and so manifestly in favor of its solution, that I should advise you to adopt this mode of administration whenever you may have need of its assistance.

Another form of so-called rheumatism which you will often be called upon to encounter is that known under the title of "gonorrhœal rheumatism." So common is this form of disease that we are never without one or more examples of it in the wards. But although the opportunities for observations are numerous, the profession have not as yet attained to much certainty in its treatment. In private practice I am often consulted by gentlemen who for months have been taking medicine without relief; and I doubt not that you have seen many patients in this hospital who, after having taken alkalies, iodide of potassium, colchicum, guaiacum, and other anti-rheumatic remedies, and having had a succession of warm baths, hot-air baths, and sulphur-vapor baths, have left the house very little better than at the date of their admission. And is not this fact, and the frequent occurrence of inflammation of the eyes which is observed in the course of this complaint, a cogent argument against its rheumatic origin? My own conviction is that the disease is due to the action of a specific poison, and has nothing in common with rheumatism as typified by rheumatic fever, except pain in the limbs and occasional swelling of the joints. Its origin is manifestly connected with a gleety discharge from the urethra, resulting, as I believe, from some peculiar form of vaginal poison distinct from that which occasions ordinary gonorrhœa. Its course is unlike that of true rheumatism, inasmuch as when it occurs in an acute form it is seldom accompanied by much heat of skin, or furring of the tongue, or loading of the urine; is attended by excessive synovial effusion, is rarely productive of redness of the affected joints, and is never marked by inflammation of the heart; and when it presents itself in a chronic form, it is almost invariably unattended by furring of the tongue or loading of the urine, or by any of the general symptoms which characterize true rheumatism; whilst the local affection as in the acute form, is distinguished by synovial effusion, by its stationary character, and by its obstinate resistance to ordinary treatment. The insufficiency of ordinary remedies is admitted by all, and I am sure I am enunciating the opinion of the profession when I tell you that cases of gonorrhœal rheumatism are amongst the most obstinate we have to deal with. Iodide of potassium, alkalies, guaiacum, colchicum, copaiba, and sarsaparilla, which are the medicines most highly esteemed in such cases, very generally disappoint our expectations; for although the urine be rendered alkaline, although iodism be induced, although colchicum, guaiacum, and copaiba be administered in full and repeated doses, although the patient take sarsaparilla *usque ad nauseam*, the obstinate swell-

ing of the knees, or feet, or wrists continues, and the wandering pains in the limbs torment the patient as before. Sometimes, indeed, the pains will subside under the influence of these remedies, but the frequency with which they continue unchecked has long since satisfied me that in many instances some agent is needed which will exert a more decidedly curative power. This agent, I believe, is to be found in the biniodide of mercury. Provided only the urethral discharge be stopped—and if it be not, measures must be taken immediately to check it—this remedy will almost always effect the object we have in view. The cases in which I have employed this drug in the wards of the hospital are so numerous, that you have all had opportunities of watching its action; but it may be well perhaps to direct your attention to one or two cases in which its effects have been strikingly manifest.

First, let me cite the case of R. C——, aged twenty-one, in Hope ward. He had been attacked with urethral discharge three weeks before admission, and for a fortnight had undergone treatment with relief, when he was suddenly seized with excessive pain and swelling of the left wrist and both knees, and with conjunctivitis of both eyes. In this state he was admitted into the hospital. His complexion was pale; skin warm, not hot; tongue coated; bowels reported open, and urine clear; pulse 96; appetite good. A slight gleety discharge from the urethra still continued.

Now, here was a case in which the articular pain and swelling were severe, and in their character corresponded with what is observed in rheumatic fever, and yet the general symptoms of the case bore no sort of resemblance to those which accompany that form of disease. Not only was there no heat of skin, but the urine was clear, the appetite good, and the conjunctiva, which in true rheumatism is rarely, if ever, affected, was the seat of acute inflammation. No wonder that in these cases the treatment ordinarily pursued for the cure of rheumatism proves inadequate to restrain the progress of the disease! The malady itself is of a specific nature, and requires special treatment. In the example before us, the patient was cachectic, and therefore the ordinary diet of the hospital, with a pint of porter, was given daily; a zinc injection was prescribed with a view of checking the gleet; the eyes were fomented with warm water; and the following medicine was administered three times daily, viz: solution of bichloride of mercury, two drachms; iodide of potassium, half a scruple; cinchona draught, ten drachms. This treatment was commenced on the 20th of June, and by the 30th the inflammation of the eyes had disappeared, and the swelling in the joints had greatly subsided. The medicine therefore was continued as before; the pain and swelling decreased daily; and on the 6th of July, as there was no longer any pain, the patient was permitted to leave the hospital.

The case of A. T——, aged twenty-two, admitted on the 18th of June into the Fuller ward, was of the same character. This man was attacked with gonorrhœa two months before admission,

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and had suffered severely from pain in the limbs and joints above six weeks, and from conjunctivitis of the right eye one week; and although he had been under medical treatment, he had not received the slightest relief. His skin was natural, urine clear and tongue clean, his bowels were regular, his pulse was 96, and his appetite was indifferent. There was severe pain, but no swelling, in most of the larger joints, and the inflammation of the right eye caused so much suffering that it prevented his sleeping at night. Fish and beef-tea were ordered for his diet, a blister was applied behind the right ear, and the following draught was given three times daily, viz: iodide of potassium, six grains; solution of bichloride of mercury, one drachm and a half; nitrate of potass, one scruple; cinchona draught, ten drachms and a half. Within five days the eye was much relieved, and the appetite had improved; and as the skin still continued cool and the urine clear, I ordered him to take meat and a pint of porter for his dinner. On the 4th of July he was able to discard his eye-shade; and on the 9th, as he had no longer any pain in the limbs, he was permitted to leave the hospital.

These two cases are fair examples of the result of this treatment when it is commenced within a reasonable time after the accession of articular mischief; and those of you who have watched my practice in the wards are aware that I seldom have a recent case of so-called gonorrhœal rheumatism under my charge above a fortnight or three weeks. But when this disease has been improperly managed, and has run on for a period of many months, it is apt to produce thickening and stiffness of the ligamentous and other structures around the joints, especially around the ankles. This chronic thickening and pain may induce permanent disability of the joints; and as internal remedies are here of little avail, and ordinary lotions and embrocations are also of little service, I will call your attention to the only mode of treatment which I have found productive of real benefit. I will illustrate it by reference to the case of J. M'G——, aged twenty-one, who was admitted into the Fuller ward on the 25th of July. This man had an attack of gonorrhœa eight months prior to his admission to the hospital, followed in the course of ten days by pain and swelling of several of the larger joints and especially of the feet and ankles. He underwent treatment with partial relief, but had never got rid of the pain and swelling of the ankles, although blisters had been applied and a variety of lotions and embrocations had been employed. At the date of his admission his ankles were both swollen, the structures external to the joint being much thickened; they were not tender on pressure, but were so painful on motion that he could scarcely walk across the ward even with the aid of two sticks. His general health was good, his functions were properly performed, and he had no pain in any other limb or joint. He had a thick discharge from the urethra, which had made its appearance from time to time ever since the attack of gonorrhœa.

Now this case is a type of many which will come before you in

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practice, and I would have you look closely into its history. What think you were the indications for treatment? The urethral discharge was an abnormal feature requiring local treatment to repress it, and a zinc injection which was ordered for that purpose effected its object in less than a fortnight. But what indications were there for general treatment—for the administration of medicine? Assuredly none. The man's health was good, his appetite excellent, his functions were regularly performed, his secretions were natural, his pulse was quiet, and there were no wandering pains in the limbs or other evidences of a poisoned condition of the blood. Accordingly I abstained from the administration of medicine internally, and addressed myself to the relief of his feet and ankles by external means. I gave directions that a cold douche should be applied to these parts daily for the space of ten minutes, or until he could bear the shock of the water no longer, and that then without previously wiping or drying the feet, active friction should be made use of until warmth had returned to them. This active heavy rubbing was continued for about twenty minutes on each foot and ankle daily. When it was concluded, and the circulation in the part was thoroughly re-established, the feet and ankles were enveloped in lint steeped in the following lotion, namely: compound tincture of iodine, half an ounce; glycerine, two ounces and a half; water, three ounces. The lint was then covered with flannel, and was kept on the part until the following morning, when the douche and friction were made use of as before, and then the lotion was reapplied. The result, as you have seen in many other cases, was that within a few days he was enabled to discard his sticks, and he left the hospital on the 22d of August free from pain and walking comfortably. In many instances of the same kind, in which patients have been admitted with the structures around the knees thickened and with chronic effusion into the capsules of the joints, I have often employed the same treatment successfully, the only variation being the use of a bandage, firmly applied over the lotion-steeped lint, instead of a simple piece of flannel—the support which the bandage gives in these cases being favorable to absorption of the synovial fluid.

Before quitting this subject, I would make a few remarks respecting this method of treating chronic thickening of the joints. It is not the mode of treatment usually employed, but it is eminently successful, as those of you who have watched my practice can testify. Case after case has come before you in the wards in which persons who have been suffering many weeks, or even months, from thickening and stiffness of some of the larger joints, and thereby have been incapacitated for work, have recovered the use of their limbs, and have left the hospital after a few weeks of this treatment. This, too, has happened in the instance of many patients who, prior to admission, have had their joints blistered, painted with iodine, and otherwise treated without relief. In truth, it has always appeared to me that the ordinary mode of employing iodine in

these cases is wrong in principle, and often useless in practice. The compound tincture of iodine is the preparation commonly employed, and it is painted over the affected part under the idea that it will act as an absorbent. But when used in this manner, it dries in a few minutes, and destroys the cuticle after two or three applications. In some instances, it may be useful as an escharotic; and, in others, it may prove serviceable as a mild counter-irritant; but it is repugnant to common sense to suppose that when applied in this manner it can exert a distinctly absorbent influence. Further, by destroying the cuticle, it soon creates a bar against its own employment, and utterly precludes the use of friction and other measures which may be deemed likely to be productive of relief. The method which I adopt has no such drawbacks. It does not lead to destruction of the cuticle; it does not even produce cutaneous irritation, unless the lint be covered with oiled silk or gutta-percha, in which case a crop of pustules will make their appearance within forty-eight hours; it insures a constant absorption of iodine, and a constant stimulus therefore to the removal of the effused fluid; it admits of the application of the douche and friction—two of our most potent auxiliaries for stimulating the local circulation and getting rid of chronic thickening around the joints; and it effects the object in view more rapidly and more certainly than any plan of treatment with which I am acquainted. The formula which was employed in this case contains as much iodine as the skin will bear without suffering, and the glycerine in the lotion prevents the drying of the lint, and does away with the necessity for wetting it more frequently than once in twenty-four hours. The patient is thus saved unnecessary trouble, and the pain and irritation resulting from the destruction of the cuticle are avoided.—*Lancet*, Jan. 31, 1863.

The Treatment of Epilepsy by Belladonna. By Dr. J. S. Ramskill, Assistant-Physician to the London Hospital, and Physician to the Hospital for Epilepsy and Paralysis.

Concerning the treatment by, and action, of belladonna in epilepsy, I will give you, in a short compass, the results of my experience in its use. First, you must not always, nor even usually, look for immediate and palpable beneficial results. The number of fits at first may not lessen in equal times; very frequently, the reverse obtains; and you may expect, for three or four weeks after commencing it, even in the most appropriate cases, a complaint that the patient gets worse; but after six or eight weeks, if any amelioration occur, it will be decided and progressive. At first the dose should be very small, and gradually augmented until the pupil shows signs of its action, and the patient

complains of both alteration in sight and dryness of throat. Having obtained this result, and maintained it for some weeks, the dose may be gradually diminished; but its effect on the eye and throat are not to be so diminished as to become imperceptible to the patient, but only so far lessened as to cease causing absolute discomfort. The other toxic effects of belladonna are wholly uncalled for. Patients vary greatly, both as to susceptibility in the action of the drug, and in other respects. The annoyance as to dry throat and disturbed vision, which, at the expiration of a month, may be said to be unendurable, will now and then cease, the dose being the same, or even slightly increased; but I may remark, these cases always improve most rapidly. I prefer to give the drug in an eighth of a grain dose three times, or only twice, daily, for a week; then a quarter of a grain for fourteen days; a third for the next fourteen days, at which time its physiological action will in most cases be manifest. I think it wise to halt at this dose for two months or three months, slightly increasing the dose if the patient shows diminished susceptibility to its influence, decreasing it if the reverse happens, and then gradually dropping it to the quantity first administered. I have given as much as four grains for a dose, but very rarely. I think it imperative to say, that I have never been able to give in epilepsy the large doses which Dr. Fuller has succeeded in administering in other diseases of a convulsive character. In this remark I am supported by the authority of my colleague, Dr. Brown-Séquard, who has arrived at the same conclusion. One objection to the use of belladonna, when you cannot see your patient at regular intervals, arises from its uncertainty of strength and corresponding difference of action. To those who wish to use a preparation of unform strength, having similar, and, in some cases, improved properties of belladonna, the salts of atropia are now easily procurable. The best of these is the valeriante of atropia; the commencing dose a-hundred-and-twentieth of a grain. Hitherto, I have preferred belladonna, having had a strong desire to find what it could and, if possible, what it could not accomplish in the treatment of epilepsy. It is right to say, there are different methods of administering belladonna. Trousseau gives a centigramme of the extract and, an equal quantity of the powder of belladonna for the first month, in the evening of each day. He gives it at this time because of the frequent nocturnal character of epilepsy, and partly because of the disagreeable effect on the sight and throat during its early administration. During the second month, he gives two such pills at the same time, and during the third month, three pills. If, at the end of six or nine months, the frequency of the fits is decreased, he increases the dose. He asserts that, of 120 patients, he has cured twenty. A most important question now arises,—Do we know any thing of the nature of the action of belladonna beyond the empirical results obtained in treatment? If a drop of solution of belladonna or atropine be dropped on the foot of a frog

properly prepared, and fixed on the field of a microscope, the blood-vessels will be seen to contract, and they will remain in this condition for a considerable time. For comparing the action of opium, a solution of the latter, similarly prepared, was applied to another part, and the vessels were immediately dilated. Now, belladonna, internally administered in medicinal doses, causes, first, dilatation of the pupil, with dimness of vision; secondly, dryness of throat and difficulty of swallowing; thirdly, increased tone of involuntary muscle; fourthly, it relaxes the bowels, and cures incontinence of urine, arising from weak sphincter vesicæ. As dilatation of pupil is one of the earliest phenomena, let us see if we can account for it. There are two sets of fibres in the iris. It is well known that the sympathetic is the motor nerve of the external longitudinal fibres of the iris, which radiate from the centre to the circumference. The branch of nerves supplying these fibres comes from the cervical ganglia of the sympathetic. Excitation of this nerve, from any cause, will cause a contraction of these longitudinal fibres, and a corresponding dilatation of pupil. There is also a circular set of fibres immediately surrounding the margin of the pupil. This set is under cerebral control; that is to say, its motor supply comes from a branch of the third nerve. Any irritation in the brain or along the trunk of the nerve, or an excitation by light on the retina acting in a reflex manner, will stimulate this branch of the third to action, and cause contraction of pupil.

But we may have dilatation of pupil without increased action of the sympathetic; it may be acting normally, then the third nerve must be supposed deficient in power. This is a common result observed in compression of brain. On the other hand, contraction of pupil may be present without abnormal activity of the third being necessarily supposed. This condition is invariably produced by section of the sympathetic in the neck. Dilatation of pupil may, in short, depend upon the action of the sympathetic being in excess, or in diminished power of the cerebral nerve. In epilepsy it is easy to observe, from collateral symptoms and the general condition of the patient, that dilated pupil, when it exists, which is much rarer than a normal condition, is usually caused by an active sympathetic overpowering the third nerve. The same dilatation may be observed in most convalescents after acute disease, and in most affections involving extreme debility; but here it would be more correct to say, that the dilatation was rather the effect of a compressed condition of the third cerebral nerve accompanying a normal sympathetic, than of an active sympathetic accompanying a normal condition of the cerebral nerve. I have said the branches of the sympathetic nerve which go to the iris, come from the cervical sympathetic. Dr. A. Walker, with Professor Budge, have made experiments, which seem to prove that the nerve fibres of the cervical sympathetic, which go to the iris, originate from the spinal cord between the sixth cervical and the fourth dorsal vertebræ. Dr. Brown-Séquard has ascertained that the

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origins of the fibres of the sympathetic going to the iris are still more extended. I have mentioned that division of the cervical sympathetic allows the uncontrolled third cerebral nerve to contrat the iris. Dr. Brown-Séquard has shown that a section of the spinal cord, as high as the level of the fifth cervical, or as low as the ninth or tenth dorsal vertebræ, affects the iris in the same manner, but in a less degree than section of the sympathetic. On the other hand, Schiff has shown that some of the fibres animating the iris ascend the cervical part of the spinal cord, and most probably go up to the medulla. I may also say here, that the sympathetic is the motor nerve of the blood-vessels, supplying various parts of the head. It is especially interesting to know the origin of these vaso-motor nerves, especially in relation to loss of consciousness, the initial movement of a fit of epilepsy, and also in regard to the pathology of the *petit-mal*, as well as the great light such knowledge would throw on the action of belladonna in epilepsy. Dr. Brown-Séquard discovered some years ago that the motor nerves of the blood-vessels going to various parts of the head, come out chiefly from the spinal cord by the roots of the last cervical and first and second dorsal nerves. He thinks, however, their real place of origin to be partly the spinal cord, partly the higher portions of the encephalon, but chiefly the medulla oblongata and the neighboring parts of the encephalon. In the case of R. P., it will be remembered the ferrum candens was applied to each side of the spine, opposite the last cervical and first dorsal vertebræ. The reason will now be apparent. The vaso-motor nerve fibres are able to contract the blood-vessels directly, when excited. We hope, by frequently cauterizing the tissues opposite the seat of exit of these nerves from the spine, to effect some change in the nutrition of the parts to which these nerves are distributed. We can now understand the nature of the action of belladonna in producing dilation of the pupil; and from its effect on the iris, we can deduce a strong probability of the nature of its action in epilepsy. It is a stimulant to the sympathetic, the motor nerve of the blood-vessels, and it is only on this suppcsition we can account for the other physiological effects of the drug.

I would add, although experience shows belladonna is one of the most powerful contractors of the blood-vessels of the spinal cord and its membranes, it has a comparatively feeble action on those of the brain. I speak of its administration in medicine—not in poisonous or fatal doses. Hence arises its extraordinary adaptability in epilepsy, where we have dilatations of vessels or turgescence in the medulla and its neighborhood; of its still more marked efficacy in inflammation, and congestion of the spinal cord and its membranes; as well as of its comparative inutility (administered alone) in those cases of morbid activity of brain, connected, as we think, with more or less congestion of gray matter, in some forms of incipient insanity, associated with sleeplessness and suicidal tendency, as well as in some other cerebral diseases.—*Medical Times and Gazette.*

Gun-shot Wound of the Hip, upon which supervened Pyœmia—Rupture of the Liver, &c. By LEWIS HEARD, M.D., Acting Ass't Surgeon, U. S. A.

[From the Boston Medical and Surgical Journal.]

Thomas McGowan, aged 26 years, by occupation a blacksmith, a private in Co. H, 121st Regt., N. Y. Vols ; of dark complexion, black hair, dark eyes; temperate habits, except excessive use of tobacco ; came into Finley General Hospital May 8th, 1863, with gun-shot wound of the left hip, received the 3d of the same month, in the battle of Chancellorsville, Virginia. He was placed in the first ward, under the care of Dr. Logan.

On examination, the ball (a Minié) was found to have entered at a point near the anterior inferior spinous process of the ileum, and taking a direction backwards, had been cut out very near the posterior inferior spinous process of the same bone, having passed close to the upper edge of the acetabulum and ischiatic notch.

No hæmorrhage. Complained of pain in the hip and thigh, with inability to use them ; pulse 90, of good strength ; slight febrile excitement, moderate heat of surface ; some degree of redness and swelling about the wounds, but little discharge. Bowels constipated ; tongue very slightly coated ; appetite impaired. He was placed in as easy a recumbent posture as possible, water dressings applied, and an opiate given at night.

May 10th.—During yesterday had less feverishness and pain. To have good hospital diet, except meat. Continue the water dressings, and to relieve the bowels, Ol. ricini ʒ i. was ordered to be given in the evening. Pulse 80, full and of fair strength ; thirst and heat less. Bowels well evacuated this morning from the oil.

May 18th.—The treatment for the last seven or eight days consisted in an occasional laxative of olcum ricini, to keep the bowels soluble, and opiates given *pro re nata*, to procure rest and sleep ; the water dressings assiduously employed, and wounds kept clean.

At this time slight chilliness being complained of, and the pulse becoming somewhat accelerated and of less resistance, with other symptoms of depression of the nerve power supervening, quinine, in doses of three grains, was prescribed and directed to be repeated every six hours. Milk punch, beef tea, chicken broth, and other nutritious articles of diet to be given, an aperient every third or fourth day to secure a proper state of the bowels, and a dose of morphine at bed time. Local treatment as before.

25th.—The above remedial management has been pursued since last date, but no material change in the condition of the patient has taken place, except the chilliness has in a great measure subsided, and he suffers less pain in the limb, and there is some improvement of the appetite. Tinct. ferri chloridi gtt. xij. to be given every six hours, alternating with the sulph. quinine. The

same nutritious diet was continued, with a moderate use of wine. No change of dressings. The posterior wound has now healed. Discharge from the anterior one free and of healthy character.

31st.—Up to this period there has been no change of treatment. as the patient gave evident manifestations of gradual improvement from it; is quite easy when perfectly at rest. Cannot, however, be moved without severe pain, and even complains of suffering from the jarring of the floor by heavy walking over it.

At this time, Dr. Logan having been taken ill, the patient came under the care of Dr. Walter, who gave unremitting attention to him till the case terminated in death.

June 1st.—At about 10 o'clock last night, he was taken with a severe rigor which lasted half an hour, when moderate reaction ensued, and at the end of an hour more, copious perspiration broke out, accompanied with considerable tremulousness of the hands. This morning he is still perspiring; pulse 130, soft, and rather small; tongue dry and brown; some thirst; seems cheerful, and expresses hope of recovery. ℞. Quiniæ sulph., ʒ ss.; acidi sulph. aromat., ʒ i.; tinct. ferri chloridi, ʒ ij.; aq. font., ʒ ij. Misce fiat mist. Dose, a teaspoonful every two hours. Diet, milk punch, etc., as heretofore.

2d.—Patient continued comparatively comfortable through the afternoon of yesterday, but at about 10 o'clock in the evening, another severe chill occurred, of about the same duration as the first, and followed by the same train of morbid phenomena. On the morning visit was still perspiring; pulse 125, small, and non-resisting; tongue dry; moderate thirst; tremor of hands the same; is rather talkative, and expresses strong hopes of recovery. ℞. Ext. valerian. fluidi, ʒ ij; carb. ammon., ʒ ij.; glycerini, ʒ i. M. ft. mist. A teaspoonful to be taken every three hours. Gave also, in addition to what he had been taking, quinine in doses of gr. v. *ter in die.* Made but little complaint through the day. Diet the same; no change of dressings.

3d.—Passed the night without chill; was somewhat delirious, however, with sleep disturbed; skin of natural temperature; pulse 135, of reduced force; tongue still brown and dry; persists in chewing his tobacco, the power of habit being so great. Has, for some days, had one healthy alvine evacuation every twenty-four hours. Tremor of hands and arms rather increased than otherwise. Seems to require an effort to speak.

At 12., M., was seized with another severe rigor; pale and cadaverous expression of countenance; pulse more frequent and very small; and in half an hour from the commencement of the chill he died, evidently from the extent and severity of the internal congestion.

Autopsy—Eighteen hours after death.

Body but little emaciated; the thigh of wounded side at least one-third larger than the other.

Thorax.—Very little effusion into the left pleural cavity; quite

extensive old pleuritic adhesions; lungs considerably congested, but not the least appearance of consolidation. No tubercles nor metastatic abscesses to be found. Heart normal.

Abdomen.—Vessels of the peritoneal covering of the intestines much injected. No effusion into the cavity of the abdomen. Liver enlarged to one-third beyond its natural size; of healthy appearance on its convex surface; but on raising it and exposing the concave side there was observed a rupture commencing on the posterior edge of the right lobe, some three inches from the apex, and extending transversely to the left three or four inches, and penetrating to the depth of, at least, a quarter of an inch, if not more, at the edge of this organ. A portion of the liver, not far from three and a half or four inches in diameter, through the centre of which passed the rupture, was of a very dark color—nearly black; soft, and easily broken down under slight pressure of the fingers, with hardly sufficient cohesiveness to sustain its own weight. It seemed disorganized—gangrenous. On making incisions into this diseased part, there issued a dark, ichorous-looking fluid, not unlike that which is discharged from certain soft structures in a state of gangrene. No abscess was found in any part of the liver. The gall-bladder contained two or three drachms of dark-colored bile.

The spleen was very much congested, and enlarged to twice its ordinary normal size, and presented the appearance of having been denuded of the peritoneum; was of unusually dark color, and so softened as to almost fall to pieces on being handled.

Other abdominal organs healthy.

On laying open the track the ball had taken, by cutting across the gluteal muscles, several ounces of pus were discharged, which had burrowed about the hip-joint and ischiatic notch. The ball had passed so near to the upper edge of the acetabulum, as to wound the capsule and open the joint; the cotyloid ligament and the cartilaginous covering of the head of the femur were corroded and rough to the feel. No further examination of the limb was made.

Remarks.—May not this case be considered one of pyæmia, though not sufficiently far advanced for the formation of metastatic abscesses, the sudden violent congestion having taken off the patient before the proper stage had arrived for these deposits?

It would have been interesting to have examined the condition of the veins, to ascertain whether there existed suppurative phlebitis or not, but there was not sufficient time given for this purpose, and it was not done.

How much the rupture of the liver and the gangrenous condition of a portion of its structure had to do with the sudden termination of the case, is a question which cannot well be determined; there can, however, be but little doubt that these, together with excessive congestion, constitute the immediate cause of death.

I have frequently witnessed great enlargement of the spleen, but do not remember to have seen a case presenting the same ap-

pearance and condition of this one; the rough and abraded surface is not common.

It is possible the patient may have been suffering under the deleterious influence of the malarious poison, though no manifestations of this had been observed till a few days previous to his death; and the symptoms then presented, were those common to both pyæmia and intermittent fever; and besides this, there has been no miasmatic disease, of any kind, in the Hospital for a long time, as I can learn; but we have recently had a number of cases of pyæmia, some of erysipelas, and one of hospital gangrene.

Finley Hospital, Washington, D. C., June 10, 1863.

On Artificial Dilatation of the Os and Cervix Uteri by Fluid Pressure from above: A Reply to Drs. Keiller of Edinburgh, and Arnott and Barnes of London. By HORATIO S. STORER, M.D., of Boston, Surgeon to the Pleasant St. Hospital for Women. Read before the Suffolk District Medical Society, May 30th, 1863.

[From the Boston Medical and Surgical Journal.]

Those who are interested in obstetric surgery can hardly have failed to notice a controversy, for many months past carried on through the more important British journals, involving the question of priority as to suggestion and practical application in a matter of much importance—namely, the dilatation of the cervix uteri *from above*, as a means of diagnosis and treatment.

As one of the original claimants of the suggestion referred to, and, as I supposed, till within a few weeks, the only one with any legitimate ground for such claim, I have felt some little interest in the result. Not caring, however, again to enter the controversial arena, I should continue to remain a passive spectator, did not a more careful examination of the whole matter, to which I have been led by some recent allegations, compel me to break silence in simple justice to one of my opponents. It will be found, also, that this communication will not be without its value as bearing upon and instancing the law which should govern physicians, as all other scientific men, in the settlement of similar disputes.

Immediately on entering practice, it became evident to me that the great field for advance in obstetric therapeutics was *the interior* of the uterus—an opinion that was daily strengthened during the intimate relations to which I was admitted by Prof. Simpson in 1854-55.

At that time the sole means, at all safe and reliable, of directly reaching the interior of the unimpregnated uterus, was by the use of expansible tents, then only made of sponge, first suggested for

this purpose by Simpson in 1844.* It is true, that for the induction of premature labor, for which the method to be considered was first proposed to the profession by both Dr. Keiller and myself, and for which its use is now urged by such competent authority abroad, there had been many measures suggested and practised—all of them, however, acting either secondarily or by reflex action, as do galvanism, mammary irritation, puncture of the membranes, their separation from the uterus by bougies, the injection of water or air, an agent here so dangerous, or by the uterine sound, and also, there seems to me good reason for believing, the so called oxytoxics, as ergot of rye; or by a stimulating or dilating force applied and first acting from below.

These remarks apply with equal force to all methods that had then been proposed—to those of Hamilton and Hopkins; to the inflexible catheter left in the cavity of the uterus by Merrem, Krause and Simpson; to the vaginal and cervical plugs and dilators of Brünninghausen, Osiander, Von Busch, Hüter, Gariel and Braun; to the carbonic-acid douche, suggested by Brown-Séquard and so fatal in the hands of Scanzoni and others; and to the water douches, of Kiwisch, applied to the vagina, and of Schweigaüser and Cohen, to the uterine cavity. These several means, while they were applicable but partially and with varying success to the pregnant uterus, were wholly unfitted, with the exception of sponge tents, for opening up that which already contained no fœtus; and for this the elastic bougies of McIntosh and the unyielding ones of Simpson, the spring-knife of the latter, the hollow tubes used by Wakley for urethral stricture and adopted from him by Baker Brown, and the instruments of Rigby, Graham Weir, Osiander, Busch, Krause and Jobert, with expanding metallic blades, are either insufficient or attended with too much hazard.

Caoutchouc bags or sacs, distended with air, had been proposed some years previously by Gariel,† for the treatment of displacements of the uterus by pressure from below, and for plugging the vagina in cases of hæmorrhage. He had also suggested their possible introduction into the cervix, not, however, through it, for the purpose of overcoming stricture of that canal, and had even asked, "if this property of the bulbous air sound could not be turned to advantageous use in inducing premature labor?" here referring, however, to their use in the vagina, as had already been suggested by Hüter and Braun. The proposals of Gariel, however, like those of Braun, were attended with singularly unfortunate results, Breit and others reporting a mortality of six patients out of fourteen,‡

To sponge tents applied to the cervix there attaches, as I have already intimated, various important objections. They are readily acted upon chemically by the uterine and vaginal secretions, and

* Edinburgh Monthly Journal of Medical Science, Aug. 1844, p. 734. Obstetric Works, Vol. i., p. 125, Scotch edition; p. 128, American do.

† Gazette des Hopitaux 1849, No. 141.

‡ Goschen's Deutsche Klinik, Berlin, 1853.

from their organic character quickly undergo putrefactive decomposition, subjecting the patient to a certain amount of risk from such possible absorption as is hereby implied. They act at times with great rapidity and force, and where the tissues are morbidly friable, if not very carefully made, they may produce unintentional or dangerous tension and laceration.

From direct experience of these several dangers, it became my aim to find, if possible, a substitute for sponge in the dilatation of the cervix, and in May, 1855, in a paper read before the Medico-Chirurgical Society of Edinburgh, I proposed the use of tents prepared from the bark of our indigenous slippery elm.* Shortly after, during the publication of Dr. Simpson's Memoirs, I had again occasion to refer to the disadvantage of sponge under certain circumstances,† and at still greater length in a paper presented during the fall of the same year.‡

The use of elm tents in my own hands and those of others who have communicated with me upon the subject, proved the agent greatly superior to sponge in those cases where a slow and moderate action is desired, as, for instance, in mechanical dysmenorrhœa and certain forms of sterility; and as yet I know of nothing that will here better answer the indication, although during the course of my experiments in this direction I have tried a variety of other substances, as althea root, etc., among them the root of gentian, afterwards made the basis of a memoir upon mucilaginous tents by an English Surgeon, Dr. Aveling, of Sheffield,§ in apparent ignorance of his having been anticipated by my suggestion of three years before.

Steadily pursuing these efforts towards the solution of the interesting problem proposed, I again called the attention of the profession to its importance by a paper published in Philadelphia early in 1859, in which were pointed out the several indications for artificial dilatation of the cervix uteri, and the several dangers attaching thereto, alike in the induction of premature labor, the assistance of the progress of accidental abortion and of labor at the full time, the exposure of the uterine cavity for the purposes of diagnosis and treatment, both in diseases puerperal and non-puerperal.‖

During the preparation of this paper, duly appreciating, as will be apparent from its perusal, the actual and relative value in the assistance or induction of labor, of the several elements of action involved—namely, dilatation of the cervical canal, detachment of

* Association Med. Journal, London, May, 1855, p. 446; Glasgow Med. Journal, April, 1856, p. 116; Braithwaite's Retrospect, Jan., 1857, p. 247, &c.

† Preface to Simpson's Obstetric Works, Sept., 1855, p. 16.

‡ This Journal, Nov., 1855; Gardner, Causes and Treatment of Sterility, 1856, p. 148.

§ Medical Times and Gazette, June, 1858, p. 653.

‖ "The Use and Abuse of Uterine Tents." American Journal of the Med. Sciences, Jan., 1859, p. 57.

XUM

the membranes from the walls of the uterus, and the prolonged preservation intact of the bag of waters—I had frequent conversations upon the subject with my friend Dr. Nathan Hayward, of Roxbury, now Surgeon of the 20th Mass. Regiment, and at that time associated with me in the conduct of the Eustis St. Dispensary. With his assistance, I contrived an instrument designed to combine the various indications just referred to, and this was used in practice upon the first favorable case that presented itself to us, on April 13th, 1859. The operation was entirely successful; labor was prematurely induced at the eighth month in a woman who had four times previously undergone craniotomy, and a living male child was delivered. The case was the more interesting to us from the fact that both Dr. Hayward and myself were present at her last confinement; I had turned and delivered the trunk, but it was found absolutely necessary to lessen the head from below before it could be made to pass.

The proposal of the measure now resorted to, as I supposed, for the first time, was made at considerable length under the name of "the uterine dilator," and the case reported in July, 1859.* I then stated that the instrument, introduced within the cavity of the uterus, produced its action in a threefold manner: "reflexively, as a foreign body; reflexively and directly, by separating the membranes from the uterine walls; and directly, as a fluid wedge, by dilating the os; in each of these three respects, its effect being in proportion to the amount of distension applied. It should be noticed that this dilatation," I also added, "is *from above downwards*, while the tent dilates from below upwards."† I referred to the similarity of this instrument to one suggested for the female urethra by Spencer Wells, of London, some months previously,‡ which in its turn had been taken from a modification by Thompson of James Arnott's urethral dilator, so forcibly brought forward as long back as 1818, both by himself§ and his brother Neil,‖ and shortly after by Ducamp in a memoir that received much approbation from the French Academy. I mentioned, also, the curious fact in the history of the various means that have been proposed for dilatation of the uterus, that they have all, without exception, been based, directly or indirectly, upon some method previously in use for the treatment of strictures of the male urethra.

I have thus plainly stated my own position in relation to the plan of dilating the uterus by fluid pressure acting from above, and have shown the gradual and successive steps by which I arrived at the idea and its development. The medium employed for dila-

* Am. Jour. of the Med. Sciences, July, 1859. p. 107; North. Am. Med.-Chir. Review, July, 1859; Essay on Criminal Abortion in America, Phila. 1860, p. 69.

† Loc. Cit., p. 112.

‡ Medical Times and Gazette, July, 1858, p. 84.

§ Treatise on Urethral Stricture, &c., &c.

‖ Elements of Physics, p. 532.

ting my sac was water; to the dangers of air used for this purpose, as it has been by others who have taken part in this controversy, I then called attention, as I shall again do in the course of the present communication.

Now as to opposing claims, which I shall endeavor to state as fairly, even at my own expense.

In March, 1859, some six weeks earlier than the date upon which my own patient was confined, Dr. Alexander Keiller, of Edinburgh, a gentleman of great obstetric knowledge and skill, and to whose ingenuity in another matter, the suggestion and application of the vaginal stethoscope, I chanced to call attention in the very paper containing the description of my own dilator—having independently conceived of the same idea, put it into successful practice in the presence and with the assistance of our mutual friend, Dr. Graham Weir. The case was immediately reported to the Obstetrical Society of Edinburgh, and was mentioned by Dr. Keiller in conversation and at his lectures, but strangely enough none of the details were put in print until the publication of a summary of the Society's Records, on the very day of my own paper, namely, the 1st of July, 1859.* This was a brief abstract of Dr. Keiller's remarks, by the Secretary; his own first publication upon the subject, with the exception of three short and bitter controversial notes,† in the latter of which he did indeed quote from the Proceedings of the Obstetrical Society already referred to, was not till a period of four years afterwards,‡ although the profession had on more than one occasion been promised an immediate communication.

On April 16th, 1859, just three days after my own application of dilatation by fluid pressure from above to actual practice, Mr. Jardine Murray, of Brighton, England, a former Resident Surgeon at both the Royal Infirmary and Maternity Hospital of Edinburgh, introduced an India-rubber air pessary, a in case of hæmorrhage from placenta prævia, into the cavity of the uterus, with the double intention of thus controlling the hæmorrhage and of effecting dilatation of the os. Mr. Murray very honorably acknowledged his obligation for the idea to his former instructor, Dr. Keiller, by whom, however, he was bitterly assailed in the letters above referred to; and his case is undoubtedly entitled to its claim of being the first of the kind put on record by publication, and the first in which the dilator seems to have been used as an intra-uterine plug for arresting hæmorrhage. This publication was in June,§ a fortnight before either my own views or those of Dr. Keiller appeared in print.

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* Edinburgh Med. Journal, July, 1859, p. 84.

† Med. Times and Gaz., June 18, 1859, p. 639; Ibid., July, 1859, pp. 24, 75.

‡ Read before the Obstetrical Society of Edinburgh, Aug. 6th, 1862; abstract from the Society's Records printed in Edinburgh Med. Jour., February, 1863, p. 763, and the paper itself in the same Journal, March, 1863 p. 782.

§ Med. Times and Gazette, June 11th, 1859, p. 606.

In April, 1861, Dr. Robert Barnes, of London, well known for his contributions to obstetric literature, brought the subject we are considering before the Obstetrical Society of London,* his first application of the method to practice having been with a case of placenta prævia, in April, 1860, just a year subsequently to those of Dr. Keiller and myself. His paper was received with marked attention, and the discussion which followed is well worthy of general perusal. Dr. Barnes discarded, as I had already insisted should be done, the use of air for purposes of uterine dilitation, and claimed, as I had done, that water was the only allowable medium—going on to assert that by this means "the practitioner was enabled to deliver almost at will, not only on a fixed day, but at a predetermined hour; a power that gives us control over cases of convulsions, obstinate vomiting, exhaustion from disease or hæmorrhage, much needed and not hitherto possessed."†

In a subsequent paper, a year later, upon "the new method of inducing premature labor at a predetermined hour," Dr. Barnes seems more decidly to claim the proposal as originally his own,‡ whereas, in fact, he but modified the shape of the dilating sac, making it "fiddle-shaped," so as to act both from above and below, a nicety that in practical application possesses little or no advantage over the original form.

Finally, during the last month,§ there appeared a communication from Dr. James Arnott, of London—to whose celebrity in former years for his various applications of fluid pressure and congelation to medical and surgical practice, I have already alluded—calling our attention, by name, to what he considers forgetfulness or intentional omission. The article to which I now refer is nearly identical with a letter by the same gentleman,‖ shortly after our first proposals in 1859.

It will have been noticed that in my own first communication, I acknowledged the fact that the instrument then proposed, like that suggested for the female urethra by Spencer Wells, was really based upon Arnott's dilator for the male.¶ Dr. Keiller, in his paper of March last, allows that his own conception of the idea was from the instrument of Mr. Wells,** and Dr. Barnes also acknowledges that the original suggestion of fluid pressure for purposes of dilatation was by Arnott.*** So far as I can ascertain,

* Transactions of the Obstetrical Society of London, Vol. iii., 1862, p. 107.

† Medical Times and Gazette, April, 1861, p. 456.

‡ Ed. Med. Journal, July, 1862. It is to this paper that the profession are probably indebted for the actual publication of Dr. Keiller's views upon the subject, some nine months later, they being professedly in answer to Dr. Barnes' claim.

§ Ibid., April, 1863, p. 968.

‖ Med. Times and Gazette, July, 1859, p. 69.

¶ Am. Journal of the Medical Sciences, July, 1859, p. 108.

** Ed. Medical Journal, March, 1863, p. 784.

*** Trans. of Obst. Soc. of London, Vol. iii., 1862, p. 120.

however, though Arnott in the various publications to which he has lately referred did recognize the real action of the fluid wedge, by which the distended membranes produce dilitation in labor, his application of the theory was to the os *from below*, or in the course of the cervix, if this canal remained uneffaced, and not *from above it;* an operation of entirely different nature, based upon an entirely different principle, and no more to be claimed by Arnott than those of Braun and Brünninghausen.

Having thus stated all the facts in the case, it will be seen that, putting aside the measures of Hüter and Braun for inducing premature labor by dilatation of the vagina as entirely foreign to the subject, it is to Arnott and Gariel that belongs the credit of first suggesting the possibility of dilating the cervix uteri by fluid pressure directly applied to that canal, in these instances from below; that in dilating the uterus by fluid pressure from above, although my instrument was already prepared for the purpose, Keiller really anticipated me by a few days in actual practice; that we both immediately made our discovery known to medical friends and thus to the profession, and that our respective publications in print were made on the same day, in Philadelphia and Edinburgh. As regards priority of publication, however, Mr. Murray certainly forestalled us both, his case being the first thus recorded. Personally, I do not hesitate thus far to yield the credit to Dr. Keiller, merely claiming for myself independent conception and suggestion. To Dr. Barnes belongs the merit of forcibly presenting the subject to the profession at a later date, of endeavoring by modification of our instruments to perfect one for practice, and of adopting my proposal of water as the dilating medium.

So far, as regards our several claims to the original proposal of dilatation of the cervix by pressure from above, I have referred to the value of water as compared with air for the dilating medium. This to my mind is practically as important as the idea of the dilatation itself, for it is a question that may often directly involve the life of the patient. Cases are already on record of sudden death from admission of air into the cavity of the uterus, especially towards the close of pregnancy and during labor. I need only refer to those instanced by John Reid,* Simpson,† May,‡ Barry,§ Depaul, Gardner, Dalton and others; and whether we are to suppose the fatal result produced by the passage of air into the abdominal cavity through an abnormally patent Fallopian tube, or its forcible injection thither by the uterine contractions, or are to accept the more probable alternative, as suggested by the younger Legallois in 1829, by Ollivier in 1833, and more recently by Reid, Simpson, Cormack,‖ and McClintock,¶ that the air is forced di-

* Physiological Researches, 1848, p. 578.

† Obstetric Works, i., p. 719, ii., p. 74; Edinburgh Medical Journal Sept., 1861, p. 289.

‡ British Medical Journal, June, 1857.

§ Prov. Medical and Surgical Journal, Nov., 1850.

‖ London Journal of Medicine, Vol. ii., p. 950.

¶ Medical Press, March, 1852, p. 147.

rectly into the circulation through the uterine sinuses, and so kills by inducing paralysis of the heart from overdistension, or asphyxia from more gradually increasing obstruction of the lungs, it is impossible to lose sight of the danger. To this I have repeatedly called attention on former occasions, and a marked and fatal instance of its effect has just been communicated to me by my friend Dr. Hitchcock, of Fitchburgh. In view, therefore, of the risk referred to, I have not hesitated to impress upon the students at present temporarily in my charge, the extreme caution necessary in manual or operative interference during labor, the impropriety of endeavoring to excite intra-uterine or intra-vaginal respiration, even by the method so ingeniously suggested by Dr. Jacob Bigelow, of this city,* and also the possibility of air sufficient to produce fatal syncope being thrown into the uterine cavity where premature labor is induced by the injection of water between the membranes and uterine walls, as in cases of death related by Guillier, Germann, Chiari and others.

In the instances of the new method reported by Drs. Keiller and Murray, dilatation was effected by India-rubber sacs into which air was forcibly thrown. Against rubber for uterine or vaginal application, used in any form except vulcanite, which as yet is afforded us in too unyielding a state, there is the insuperable objection that it is chemically acted upon by the fluids with which it comes in contact and becomes at once offensive and irritating. If distended to any great extent, it is very liable to rupture, and if this be guarded against by an increase of thickness, the introduction of the sac becomes proportionately more difficult. In the use of thin animal membrane for dilatation the same liability to rupture exists, unless, as suggested by Arnott, a delicate layer of a stronger substance, as silk, be interposed between two layers of the membrane. In practice I have more than once ruptured the membrane during its distension by water, and therefore know that what I have asserted of such danger where air is used, is not unfounded. What, then, can be said of the deliberate use and recommendation of air under these circumstances? Is it not an unjustifiable exposure of the patient's life to a grave and unnecessary risk?†

To one other objection that might be alleged I must call attention, merely to state my belief that it is unfounded. There is no doubt that in the induction of premature labor by the injection of water at random between the membranes and the uterine wall, after the method of Schweighauser and Cohen, and as is now so commonly done, there is some liability of effecting an unfavorable change in the presentation of the child, and of inducing hæmor-

* American Journal of the Medical Sciences, April, 1829, p. 285.

† I might refer to various other points, of practical importance in this connection, but prefer to leave them in the hands of an intelligent and talented gentleman of the present medical class, Mr. Greene, of Fitchburg, who is preparing a monograph upon the subject.

rhage by partial separation of the placenta. It is also possible, as in two cases lately related by Simpson,‡ that rupture of the uterus, from excessive overdistension, may thus be produced. These remarks, however, do not legitimately apply to the subject now under our consideration. The extent of separation of the membranes, of dilitation of the cervix and of additional distension of the uterus, by the use of the enclosing sac we have proposed can be kept perfectly under control. The amount of dilitation and its exact location are accurately known from the size and position of the sac, and, in case of necessity, by a mere turn of the stop-cock we can at once effect the entire escape of the fluid and collapse of the dilatatorium.

The method we have now discussed, it will have become evident, is applicable not merely to cases requiring the induction of premature labor, but wherever for any other reason it is desirable to have free access to the uterine cavity, as for the removal of tumors, &c., &c. A consideration of these circumstances, however, I shall reserve for another occasion.

Editorial and Miscellaneous.

Registration of Massachusetts.—Some twenty years since Dr. A. A. Gould undertook the compilation of the statistics of Massachusetts in relation to Births, Deaths, and Marriages. Notwithstanding the embarrassments connected with such a labor at that period, Dr. Gould acquitted himself very well. Much valuable information was elicited. He now submits a report for the year 1861. From this we gather a few facts concerning the events of the times. It appears that in Massachusetts there has been a marked diminution in the number of marriages and births, occasioned by the absence of so many of the young men in the service of the country. In 1861 the births were 606 less than in 1860; the number of marriages was less by 1432. The national loss, according to these figures, in 1861, in the way of births, will fall but little short of 20,000. When, now, we take into consideration the

‡ Edinburgh Medical Journal, Sept., 1861, p. 290.

fact that the number of young men absent from home in 1862 is double that of the preceding year, the losses of the country, in the way of births for this year, will reach, in round numbers, 40,000; that is, 40,000 births less in the United States in 1862, than there would have been had the pursuits of the people not been disturbed by civil war.

On the subject of Abortion, the following is presented as the nearest approximation to truth:

"Some efforts have been made to estimate the losses by abortion, that is, the failures in child-bearing during the four early months. By calculations derived from 6,000 mothers, 17 failures to 100 births after that period were *ascertained;* the stage previous to the time at which ascertainment is possible being still more tender, the rate of loss would be proportionally larger; so that Mr. Whitehead concludes, that of the whole number of actual conceptions, not more than one half are born alive at the full period."

It seems there is a continued increase of foreign over native births in the State of Massachusetts; and perhaps what is true of Massachusetts, will be found to be true of other New England States.

"In 1853 the excess of births of American parentage, over those of foreign parentage, was 2,793; whereas, in 1861 the excess of births of foreign, over those of American parentage, was 1,512, a difference of 4,305. In five counties the strictly foreign, where both parents were foreigners, exceed the American births, viz., Hampden, Middlesex, Norfolk, Suffolk and Worcester. The aggregate in these counties are, American, 8,415; Foreign, 11,600; mixed, 1,658; giving a preponderance of 3,185 births of foreign parentage."

The total number of deaths in the State of Massachusetts was 24,085, and of still-born children 1,017.

During the past year, we received a *Preliminary Report* on the Eighth Census, by Joseph C. G. Kennedy, Superintendent. From this report we extract the following table, which shows the deaths in the United States for the year 1860. The remarks appended, are explanatory, by the author, of Massachusetts report:

Deaths in the United States for the Year ending June 1, 1860.

States and Territories.	Population.	Deaths, 1860.	Population to one Death.	Deaths pr ct. 1860.	Deaths pr ct. 1850.
Alabama	964,201	12,759	74	1·34	1·20
Arkansas	435,450	8,855	48	2·06	1·46
California	379,994	3,704	101	0·99	1·00
Connecticut	460,147	6,138	74	1·35	1·59
Delaware	112,216	1,246	89	1·13	1·34
Florida	140,425	1,764	78	1·28	1·08
Georgia	1,057,286	12,816	81	1·23	1·11
Illinois	1,711,951	19,299	87	1·14	1·38
Indiana	1,350,428	15,325	87	1·15	1·32
Iowa	674,948	7,259	92	1·09	1·08
Kansas	107,206	1,443	73	1·37	—
Kentucky	1,155,684	16,466	69	1·45	1·56
Louisiana	708,002	12,324	57	1·76	2·35
Maine	628,279	7,614	81	1·23	1·32
Maryland	687,049	7,370	92	1·09	1·68
Massachusetts	1,231,066	21,303	57	1·76	1·98
Michigan	749,113	7,390	100	1·00	1·16
Minnesota	173,855	1,108	153	0·65	0·50
Mississippi	791,305	12,213	64	1·57	1·46
Missouri	1,182,012	17,652	66	1·52	1·83
New Hampshire	326,073	4,469	72	1·39	1·35
New Jersey	672,035	7,525	88	1·14	1·34
New York	3,880,735	46,881	82	1·22	1·49
North Carolina	992,622	11,602	84	1·19	1·21
Ohio	2,339,502	24,724	93	1·07	1·48
Oregon	52,465	237	218	0·46	0·36
Pennsylvania	2,906,115	30,214	95	1·06	1·26
Rhode Island	174,620	2,479	69	1·44	1·55
South Carolina	703,708	9,745	71	1·41	1·22
Tennessee	1,109,801	15,153	72	1·39	1·20
Texas	604,215	9,377	63	1·58	1·48
Vermont	315,098	3,355	92	1·08	1·02
Virginia	1,596,318	22,472	70	1·43	1·36
Wisconsin	775,881	7,141	107	0·93	0·97
Colorado	34,277	—	—	—	—
Nebraska	28,841	381	75	1·34	—
Dakota	4,837	—	—	—	—
New Mexico	93,516	1,305	71	1·42	1·91
Nevada	6,857	—	—	—	—
Utah	40,273	374	106	0·94	2·13
Washington	4,594	50	228	0·44	—
District of Columbia	75,080	1,285	58	1·74	1·66
Totals	31,443,322	392,821	79	1·27	1·41

"As the above figures are but for a single year, they cannot represent very accurately the result which would be derived from an average of a long series of years. Still there is evidently a wide range in the death-rate in different States and continental regions, represented at the one extreme by Arkansas, where one person dies in every 48 inhabitants, and at the other by Oregon and Washington Territory, which are put down respectively at one death in 237, and one in 228 inhabitants; and the average for the whole country at one death in 79, 1·27 per cent. of the whole population. The relative low death-rate in the newly-settled Territories is partly accounted for by the fact that the inhabitants are mostly emigrants, in the prime of life, with a very small proportion of women, children and aged persons. Another cause of disparity is doubtless on account of the scattered and to some extent friendless condition of the people, so that many die unknown, and more still uncared for, and their fate is never reported.

"Still there is a marked difference in the several regions where the disparity cannot be accounted for by any supposed deficiency in the returns. The essential agreement on this point in the two enumerations of 1850 and 1860, places the matter beyond a doubt. There is also a table, from the Census Abstract, highly instructive and important, showing how much the death-rate is modified by the features of extensive natural regions of territory. The reputed salubrity and insalubrity of the interior continental regions (those not exposed to the influences of any sea), the Northwestern States on the one hand, and the hot, low, alluvial regions of the lower Mississippi Valley on the other, are shown to be based on ascertained facts. Every person, in selecting a place for permanent residence, may well be influenced by these considerations."

We have some singular facts, in this report, in regard to the relative increase in the United States of the negro population—free colored and slaves. "In the interval from 1850 to 1860, the total free colored population of the United States increased from 434,449 to 488,005, or at the rate of 12·33 per cent. in ten years, showing an annual increase of one per cent.; this result includes the number of slaves liberated, and those who have escaped from their owners, together with the natural increase. In the same decade the slave population, omitting those of the Indian tribes west of Arkansas, increased 23·39 per cent., which rates exceed

that of the free colored twofold." Such facts imply an excessive mortality among the free colored population of the U. States. In looking up the figures in the cities of the States north, it is found that in Boston during the five years ending with 1859, the number of colored births was one less than the number of marriages, and the deaths exceed the births in the proportion of nearly two to one. In Providence, Rhode Island, the deaths are one in 24 of the colored population. In Philadelphia, during the last six months of the census year, the city registration gives 148 births against 306 deaths, among the free colored. Generally, it is stated, the yearly deaths, in the New England States, of the colored population exceeds the yearly births. The remark is made in the report, that were it not for the accessions to the free colored population by manumission, it would in the United States approach that condition known as "a stationary population."

Surgeon-General Hammond.—We see it announced in the political papers that Surgeon-General Hammond has been superceded. We have no disposition to speculate on the causes that brought about this event. Indeed, many would suppose that they occupy a position too near the surface to afford much exercise to those who are fond of looking up first principles. Surgeon-General Hammond assumed to be the mind of the medical profession, so far as the Army is concerned; and he was liberal enough towards himself to suppose that his pretensions would be at once recognized. In this, however, he has been disappointed. The Circular No. 6 withholding supplies of calomel and tartar emetic from the Surgeons of the Army has been universally regarded as improper, even as insulting. Medical men acknowledge no authority but that of superior Wisdom. Whoever proposes innovations or the adoption of any thing new, must show himself, in order to receive attention, possessed of superior knowledge. This Surgeon-General Hammond has not done. He is certainly very clever so far as information is concerned. He has given evidence too of industry. Still the Circular No. 6 is accompanied with no reason at all sound showing that calomel and tartar emetic should be withheld from the Supply Table. The Circular, it is true, stated that "modern pathology" had shown that the articles in question were useless and injurious. Upon this the Profession,

we presume, would be inclined to take issue with the Surgeon-General, and say that modern pathology has shown no such thing. All admit that these articles are not used as much now as formerly. Still they are regarded as indispensable—nothing at all having been discovered in pathology rendering them useless. Certain results can be accomplished with them in the treatment of disease that can be accomplished with nothing else known. Their sphere of application, by "modern discovery," has been limited—that is all.

It has been stated that the Surgeon-General has been collecting statistics in order to give plausibility to the Circular No. 6. That he will be able to obtain a great many cases in which the drugs in question have produced disastrous consequences, no one will doubt. But this would only prove them powerful agents—nothing more.

The Dermatobiotikon.—We have received from Dr. Firmenich, of Buffalo, N. Y., an instrument for the introduction of medicine into the system through the skin. It consists of a cylinder of gutta percha, containing a number of very fine acupuncture needles, properly protected. The instrument is neatly got up, and we can see no reason why it should not answer the purpose of introducing medicine into the system through the skin very well.

Starling Medical College.—The advertisement of this Institution will be found in the present number. The session commences October 22d, and continues until the 1st of March. Young men in search of an institution for a Medical education, will find much in Starling College to attract their attention.

We publish in this number a brief notice of the late Dr. Hildreth, of Marietta. We say brief because it would require a volume of respectable size to do justice to the services of the deceased. Dr. H. impressed himself both favorably and usefully upon his age. As one of the pioneers he did much to preserve a remembrance of things connected with the early history of the State; and as a physicist, his contributions were very clever.

We see it noticed in foreign journals that *Dr. J. M. Neligan*, so favorably and so generally known in this country for his work on "Diseases of the Skin," and "Medicines: their Uses and Administration," died in Dublin, Ireland, a short time since.

The subscription price of the *Medico-Chirurgical Review* has been advanced by Lindsay & Blakiston, the importers of the work, to $6 00 per annum.

Death of Doctor Hildreth.—Dr. Samuel Prescott Hildreth, so widely known as one of the leading and most esteemed citizens of Marietta, died last Friday night, about 11 o'clock—July 24, 1863—in his 80th year. He had been in usual good health—a well-preserved and happy old gentleman—until Sunday, 5th inst. On that morning he went to church, of which he was a regular attendant, but at the evening service he was too unwell to attend. He gradually sank away, his mind but little clouded, if any, until he was gathered to his fathers in the fullness of his years, only about two months less than four-score. His funeral was on Sunday, 26th inst., the services being in the Congregational Church, of which he was a member, conducted by Rev. Mr. Wakefield, of Harmar, and President Andrews, of Marietta College.

Dr. Hildreth was born in Methuen, Mass., Sept. 30, 1783, about a mile north of the present manufacturing city of Lawrence, on the Merrimac River. His family was one of some note in Massachusetts. He was descended, in the sixth generation, from Richard Hildreth, who emigrated from England over two centuries ago. Abel F. Hildreth, distinguished for many years as Principal of "Pinkerton Academy," at Derry, N. H., was his kinsman, and Richard Hildreth, the Historian, is his distant relative. His boyhood was passed in active work on his father's farm, where he acquired the habit of industry and toughened his physical powers for a long, vigorous and useful life. From a "Social Library" in the town he formed the taste for reading, and continued a great reader until his last illness. After the common school, he prepared for College at "Phillips Andover Academy," one of the best in New England. Without completing a collegiate course, he

studied medicine with Dr. Thos. Kittredge, at Andover "North Parish."

In May, 1805, when less than 22 years of age, Dr. Hildreth began the practice of medicine in Hampstead, Rockingham Co., N H., a small inland town. He there boarded with John True, Esq., whose brother, Dr. Jabez True, was then living in Marietta, having located here early in the summer of 1788, the first season of the settlement. From him he learned of a "good opening for a young man" in Marietta.

After sixteen months of practice in New Hampshire, he started, on horseback, September 9, 1806—being 23 years old that month —and arrived at Marietta October 4th, following. This place then contained about 600 inhabitants.

He remained here about nine weeks, when, on invitation of the leading citizens of Belpre, twelve miles below, to become their physician, he went to that place, December 10, 1806. That night, never more to return to it, Blennerhasset left his "fairy island."

While in Belpre, August, 1807, he married Miss Rhoda Cook. She was a native of New Bedford, Mass., and came to Ohio in 1804, her mother having purchased a farm in Belpre, nearly opposite the mouth of the Little Kanawha. For fifty-six years they trod the path of life *together*—even-tempered years to them—and reaping the reward of industry and prudence, a competence, the love of all, a family of children grown up to usefulness in life, a happy old age. Mrs. Hildreth survives, well nigh unto four-score, "young for her years."

In March, 1808, after a practice of fifteen months in Belpre, Dr. Hildreth returned to Marietta, and ever after resided here. He wrote on April 6th last: "After a laborious practice of medicine for fifty-five years, I, two years ago, laid it entirely aside, *and am waiting the time of my departure with resignation and hope.*" The italics are ours. Who that knew Dr. Hildreth does not at once recognize the truth of these words, written by himself?—

> "He is the happy man, whose life e'en now
> Shows somewhat of that happier life to come."

At the age of 27, in 1810, Dr. Hildreth was elected Representative to the Ohio Legislature. He was re-elected in 1811. He was a Democrat or Republican of that day, a supporter of the

Administrations of Jefferson and Madison. On his re-election, in 1811, he beat the late Judge Ephraim Cutler, who was a Federalist, twenty votes in Washington county. Party lines were obliterated in the Administration of President Monroe, and later years found Dr. Hildreth and Judge Cutler acting in political concert, as Whigs. So also, in 1811, the late Hon. Wm. Woodbridge, Whig U. S. Senator from Michigan, 1841–47, beat the late Hon. Wm. R. Putnam (father of the present Col. Wm. R. Putnam) for the Ohio Senate in this district—Woodbridge being a Jefferson Democrat, Putnam a Federalist. Both became Whigs, in Whig days. The taste of Dr. Hildreth did not lead him to political life, and after serving two terms in the Legislature, he never again, we believe, became a candidate for office. He always, however, held decided political opinions, and was not so careless of his duties as to neglect to vote on the side of what he believed to be the Right. He was a Republican, from the formation of that party in 1854. It is proper to state, in this connection, that in 1811, while a member of the Legislature, he was elected by that body "Collector of Non-resident Taxes," for the 3d district of Ohio—pay about $250 a year—and held the office eight years, when, in 1819, the office was abolished.

Whatever Dr. Hildreth did he did well. In 1810, fifty-three years ago, he became Clerk of the Trustees of the Ministerial Lands, and retained the position until his death. One of his last acts in health—the last time we saw him in life—was when, a day or two before his final sickness, he came to procure a copy of an advertisement with reference to the Temporary Leases of the Ministerial Lands—the same cheerful old gentleman we had known for eighteen years. We thought then of his cheerfulness, a characteristic, and reflected:

> "He wears the marks of many years well spent,
> Of virtue, truth well tried, and wise experience."

Abroad, Dr. Hildreth was known, and well known for his scientific labors, for his various publications in medicine and several scientific subjects, and in local biography and history. Among his publications, were, in 1808, a history of the Epidemic of the year 1807, in 1812, a description of the American Colombo, with a drawing of the plant; in 1822, an article on Hydrophobia, and another on a curious case of Siamese twins, in his practice—all of

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these in the New York Medical Repository; in 1824, in the Philadelphia Journal of Medical Science, a full history of the Great Epidemic Fever that visited the Ohio Valley and Marietta in 1822 and 1823; and in 1825, in the Western Journal of Medicine, Cincinnati, an accouet of the minor diseases of the epidemic. In 1826 he published, in Silliman's Journal of Science, New Haven, a series of articles on the Natural and Civil History of Washington county. From that time until his death, nearly forty years, he was a contributor to the Journal—such articles as descriptions and drawings of fresh-water shells found in the Muskingum and other streams; several upon geological subjects, touching upon the geology of Southeastern Ohio; the salt-bearing rock; the history of salt manufacture from the first settlement of Ohio; the coal formation, etc.; "The Diary of a Naturalist;" on the 17-Year Locust in 1829, again in 1846; and from 1826 to the present time, a journal of the weather, amount of rain, flowering of plants, ripening of fruits, etc., for each year.

In 1837 Dr. Hildreth was one of the Assistant Geologists upon the State Geological Survey, and the report of his labors was published by the State, in connection with the reports of other geologists upon the survey.

In 1839 he was President of the Medical Society of Ohio, and delivered the annual address at Cleveland, a history of the diseases and climate of Southeastern Ohio from its first settlement, which was printed by the Society. In the same year, he published a History of the Settlement of Belville, Western Virginia, continued in several numbers of the "Hesperion," a magazine then published at Cincinnati, by Wm. D. Gallagher and the late Otway Curry. In 1842 and 1843, he contributed many valuable articles to the "American Pioneer," then published monthly at Cincinnati, by Col. John S. Williams. In 1848 was published his "Pioneer History," an octavo volume of 525 pages, "an account of the first examinations of the Ohio Valley, and early settlement of the Northwest Territory." His volume, octavo, 539 pages, "Lives of the Early Settlers of Ohio," followed, in 1852.

In 1830, Dr. Hildreth began in earnest the collection of a Cabinet of Natural History, from the fossils, insects, shells and plants of Ohio, and by exchanges of these, acquired minerals, insects, marine shells, etc., from other quarters. In a few years he had 4000 specimens in natural history, arranged in cases and drawers,

labeled, numbered, and entered in a catalogue—with many curious relics from the "ancient mounds." In 185–, he donated to Marietta College his cabinet, together with his scientific library and various volumes, that are rare, upon the early history of the West. They occupy a room in one of the College buildings, known as the "Hildreth Cabinet." This donation made Dr. Hildreth one of four or five of the largest benefactors of the College.

The cheerfulness of Dr. Hildreth has been mentioned. He "looked on the bright side of things"—loved beauty, although of an eminently practical turn of mind—was very fond of flowers, which he cultivated diligently. Industry, and system in all that he did, may be accounted among his marked points. Besides his laborious medical practice he accomplished very much, as he himself expressed it, by *saving* the "odds and ends of time." Without having a "brilliant" mind, he forcibly exemplified the fact that "industry is talent." He was exact in all his dealings—an honest man, a Christian. His was a *complete* life. He "finished his work."

> "His life was gentle; and the elements
> So mix'd in him, that Nature might stand up
> And say to all the world: *This was a man!*"

—*Marietta Register, July* 31.

Pressure at the Bottom of the Atlantic.—Several experiments have been tried during the last few days, at the Wharf-road, to determine what effect the pressure of the Atlantic sea has upon a submarine cable laying on its bottom at a depth of 2¼ miles. The experiments were made in Reid's large press, capable of resisting a pressure of above 10,000 lbs. on the square inch. The specimen of cable used is known as the Persian Gulf standard, having a coating of gutta-percha ⅝ of an inch in diameter. It was subjected to a pressure equal to two miles and one quarter of a mile deep, and the pressure kept on for one hour, first having been carefully tested by what is known as Professor Thompson's reflecting galvanometer.

Some people who call themselves electricians were of opinion that this enormous pressure—about 5,000 lbs. on the square inch—would force the water into the copper core, and by this means deteriorate the cable, if not quite destroy it.

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These experiments have completely demolished this theory. On the contrary, when the pressure was removed, the cable was found to be considerably improved, and gave with the same instrument several degrees of improvement. These experiments will be continued during the course of the next week, upon a more extended scale, and carefully recorded.

At the present time several gentlemen wished to ascertain the truth of an old anecdote current at sea, that was said to be performed by an old salt, viz.: he sunk a bottle of wine to a great depth in the Atlantic, securely corked, and when pulled up all the wine had disappeared and was replaced by salt water. Another story of the same kind has been long in circulation—that if you take an empty bottle, securely corked, and sink it to a great depth, it will come up filled with salt water, while the cork remains undisturbed.

In order to test the first of these theories, six quart bottles of Bass's pale ale were submerged, securely corked and wired down, then covered with Betts's patent capsules ; there were also several bottles of lemonade and ginger-beer, all properly secured in the same way.

To test the second theory of the empty bottle, one was securely corked and wired, one was corked after another fashion, having a large knob left on the cork in the form of a champagne cork, to prevent it being driven in. The third bottle had a wood cylinder put inside, resting on the bottom, and reaching the cork, to give another form of resistance to the cork. The pressure was the same as before, and the time under pressure the same, viz., one hour.

The results were as follows:—The Bass's ale came out all sound and good, the same with the lemonade and ginger-beer. The small space left by the bottle between the cork and the liquor was filled up. With this exception all was the same. The first empty bottle the cork was driven in, and as a matter of course the bottle came up filled with water. The second bottle with the large knob was also driven in, and the bottle came up full. The third, that had the wooden cylinder inside, on which the cork rested, was driven in to a certain extent, not whole, and this bottle came up also full, showing that at these great depths no corking, however secure, will prevent the water from getting into an empty bottle, and when you send the bottle down filled and well corked, there is no danger of the liquor making its escape and being filled with another; so that

the sailor must have drank the wine first, and sent the empty bottle down afterwards.

Another interesting experiment was tried to test the accuracy of Dr. Wallich's statements as regards living creatures at great depths in the ocean.

It is a generally received opinion that no living creature exists at the bottom of the Atlantic—that in these dark and silent regions of the great deep eternal silence and solitude reign, the bottom being a fine deposit of diatomates too minute for the naked eye of man.

To demonstrate this, some live carp, lobsters, eels, etc., were put in the cylinder; the same pressure (Atlantic depth) and the same time—one hour. The whole perished, and came out quite stiff, thus proving that the general opinion on this subject is correct, and that Dr. Wallich's statement wants confirmation.—*Chemical News, London, July* 25, 1863, *from Engineer.*

Doctor John Moore Neligan.—Dublin has, within the last ten days, lost another of her celebrities. It is really appalling to reflect on the number of the more prominent members of the profession in the Irish metropolis who have been removed by death within the last few years. The veteran Peile, of

> "Ingratiating manners, feeling mind,
> His hand as steady as his heart was kind,"

whose decease we recorded in our first volume for 1858, was followed to the grave in rapid succession by Harrison, Crampton, Montgomery, Marsh, Porter and Cusack. Of their contemporaries, Wilmot, Carmichael, Colles, Cheyne, had gone not very many years before.

Most of all these had, however, attained the threescore years and ten, stated on high authority to be the natural limits of human life, and some had been so strong that they had come to fourscore years and more; but it is now our melancholy task to announce the removal, in the prime of life, of one whose name has, almost from the period of his entrance into the profession, been conspicuous in the pages of medical literature.

John Moore Neligan was born in the town of Clonmel, in Ire-

land, where his father practised as a physician, in the month of June, 1815, one week after the eventful battle of Waterloo.

At the time of his decease, on July 24, 1863, he had, therefore, little more than completed his 48th year.

Having passed through the necessary courses of preliminary and medical education, he graduated as M.D. in Edinburgh in 1836. As a writer, his earliest essays appeared in the Dublin Journal of Medical Science, and in the Edinburgh Medical Journal.

His work on "Medicines; their uses and mode of administration," has passed through five editions, and a sixth is in preparation. In 1848, he was selected by the late Dr. Graves, to bring out the second edition of his far-famed "Clinical Medicine." Among his other works were his "Atlas of Cutaneous Diseases," and his "Practical Treatise on Diseases of the Skin." More particularly in this specialty he enjoyed an extensive practice. From 1849 to 1861, he was the able, diligent, and impartial editor of the Dublin Quarterly Journal of Medical Science. At home and abroad his professional reputation was deservedly high. In 1853 the University of Dublin conferred on him the honorary degree of Doctor in Medicine. He was a fellow of the King and Queen's College of Physicians in Ireland, and an honorary member of the Medical Societies of Sweden, Athens, Cork, Belfast, etc., and of the Pharmaceutical Society of Great Britain. He was for some time Physician to Jervis Street Hospital.—*Med. Times, 1st Aug.*

The Upas Poison.—A Dangerous Experiment.—The upas tree of Java, known to botanists as the *Upas antiar* or *Antiaris toxicaria*, produces a milky juice with which weapons are poisoned. The poisonous principle is called *antiarin*, and contains $C_{14}H_{10}O_5$. It forms small pearly crystals soluble in 27 parts of boiling water, and also in alcohol, but scarcely so in ether. Introduced in a wound, it rapidly brings on vomiting, convulsions, and death. The *Abeille Médicale* states that a short time ago a scientific gentleman at Berlin received a small quantity of the condensed juice of the upas, and resolved to try the effects of it upon himself. One afternoon he accordingly took three grains of this drug, which he found very bitter and rather saltish. Immediately afterwards he felt extremely gay, and a bad headache which he had at the time dis-

appeared; but after awhile he experienced a sensation of oppression in the stomach. Nevertheless, he had the imprudence to go out: on turning a corner he became aware of a considerable stiffness along the spine; this was about half an hour after having taken the poison. An hour later, while taking a cup of coffee, he felt a violent shock throughout his body and stiffness at the extremities; at the same time his head was thrown backwards, he lost all power of speech, but his mental faculties remained unimpaired. There was a slight remission of these symptoms for a few minutes, and then a fresh attack came on; and this continued until the patient at length succeeded in expressing a wish to be taken to the hospital of La Charité. As he was being helped down stairs to get into a carriage, a new attack impeded his progress; but during the drive he had none, although the slightest shake seemed sufficient to bring it on. These attacks were attended with but little pain; deglutition was very difficult, and the patient felt very weak. After every attack the muscular system relapsed into inertness. At the hospital, emetics were immediately administered to expel the poison if any remained; the vomiting was attended with sudden starts, spasms in the glottis, and difficulty of breathing; the latter symptom, however, soon subsided. The pulse was at 72. Thirty drops of laudanum were administered at the rate of ten for every quarter of an hour, and then thirty more, in three parts, at intervals of half an hour. The patient fell asleep, but was often awakened by the contraction of the muscles of the back and neck. Laudanum was again administered, and sleep returned. On the following morning the patient felt very weak, but only complained of stiffness in the left muscles of the neck; the pulse was at 66. Wine and light food were now given instead of medicine, and on the sixth day the patient left the hospital perfectly recovered.—*Chemist and Druggist, May* 15, 1863.

Adulteration of Quinine.—Mr. J. Brendon Curgenven, in a letter to the Dublin Medical Press, May 13th, states that *muriate of cinchonine* is extensively used to adulterate the disulphate of quinine, and he advises all who have quinine in their possession to ascertain by the following tests how far it is adulterated:—"Quinine is soluble in ether, but cinchonine is not; quinine mixed with water, is dissolved by adding a little chlorine water; if to this

solution ammonia be added, it becomes grass-green in color. If cinchonine be treated in the same way, the ammonia produces a white precipitate."—*London Pharmaceutical Journal, June,* 1863.

Death from Swallowing Blue Pills.—An inquest has lately been held at Rogate on a woman named Caroline Stevens, who died from mercurial poisoning brought on by taking blue pills. It appeared from the evidence that she had once been ordered by a medical man to take a quarter of an ounce of blue pills in a month. She derived benefit from the prescription, and the next year she procured more in larger quantities, which she took till it affected her mouth. The following two years she obtained still larger quantities, and on both occasions it produced more or less salivation. She usually procured it in lumps of a chemist living at Petersfield. She thought the last time she left it off too soon. On the present occasion she procured more, and had been taking it six weeks. Dr. Peskett, who attended her, found, by directions of the deceased, in an old wardrobe, done up in a quack medicine paper, ten rolls of pills, which he produced. Each roll was $1\frac{1}{4}$ inch in length, and $1\frac{1}{6}$ inch in circumference. Deceased told him that she usually took fifteen pills twice a day; on one occasion she took fifteen three times in one day; for several weeks not less than twice a day. The druggist who sold her the blue pills said she had been in the habit of buying three or four ounces at a time. He sold it under the impression that she and her husband had bought the pills for the purpose of retailing them in the country.—*Ibid. from Medical Times and Gazette.*

Digestion.—M. Brücke, of Vienna *(Constatt's J. de Pharmacie),* has communicated to the Austrian Academy of Science an interesting paper on the influence of acids and pepsin in digestion, and on the question whether the latter is formed during that process; and also, in what manner the secretion of the digestive fluid takes place. By pepsin, Brücke understands the nondescript substance emanating from the glands of the stomach, and which, in an acid solution, has the power of dissolving all albuminous matter in the stomach as well as without it. He found by a number of careful

experiments that this power is strongest in a solution of $\frac{7}{8}$th gramme of dry hydrochloric acid in a litre of water, decreasing when the amount of acid rose above $1\frac{1}{3}$ or fell below $\frac{9}{16}$ths of a gramme. Contrary to the generally accepted views of Mulder, that part of the albuminous matter may pass into pepsin, Brücke's experiments go to show that such is not the case. He concludes that the stomach in an empty condition contains no acid fluid which is only secreted by the action of the nervous system when food is introduced. Dr. Ebstein *(ibid.)* communicates a series of experiments on the action of saliva upon starch. Like Leuchs, Frerichs, and others, he found that starch, in contact with saliva, even in the presence of some acid, to a certain extent is converted into dextrin and sugar, and that the secretions of the stomach, though of an acid reaction, do not prevent this change. Dr. E. remarks, that while secreting the saliva necessary for his experiments, he found it advisable to abstain from smoking, which, we suppose, he otherwise considers a legitimate occupation during physiological experiments; he does not, however, suggest the same caution in regard to chewing.—*Chem. News, London, July* 11, 1863.

Singular case of Twins. By J. N. Fraser, M.D., L.R.C.S., St. Johns, Newfoundland.

On the 15th of April last, Mrs. ——, aged 25 years, of leucophlegmatic and somewhat nervous temperament, was delivered (under chloroform) of a full grown male fœtus, which was strong, and in every respect natural. Soon afterwards I proceeded to remove the placenta, but could not do so by using moderate traction. On examination per vaginnam, the finger impinged upon a hard substance quite unlike the placenta, which could also be felt. The uterus was well contracted. By the exercise of slightly increased force, the placenta was removed, and together with the secundines a second male fœtus was born—about four months old —perfect in every respect; and wholly free from decomposition, somewhat soft, but possessed of no offensive odor whatever. There was only one placenta and one membranous receptacle. The umbilical cords were inserted in the placenta about three inches apart. The undeveloped fœtus measured in length six inches, and weighed six ounces and two drachms; the umbilical cord measured twelve

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inches in length; the head was completely flattened, but every feature was naturally formed. The question arises, was this a case of superfœtation (granting the possibility of such an occurrence prior to a certain date), or one of twin conception occurring at or about the same period?

Dr. Churchill states "that the theory of superfœtation is opposed by physical difficulties, which are insurmountable in the present state of our knowledge." Dr. Ramsbotham says, "It is impossible to suppose that a subsequent impregnation can occur while one fœtus of four, five, or six months' growth occupies the uterus. Dr. J. M. Duncan affirms "that the deciuda reflexa is not in contact with the decidua vera till after the third month, and that up to that time there may be free communication between the ovary and vagina, and consequently, liability to a second impregnation." The possibility of such an occurrence is also, I think, implied in the statement of Dr. Ramsbotham. Dr. Churchill remarks that "additional evidence, however, would be necessary to establish this opinion."

In the present instance there are no fixed data upon which to base a decided opinion; but from all the attendant circumstances of the case, I believe it to have been one of twin conception occurring at or about the same time. From an early period to the termination of utero-gestation, the patient complained of feelings and sensations quite different to any experienced during her former two pregnancies—she suffered from considerable pain and weight about the vagina and hips, and could not take the same amount of exercise as on previous occasions. She also complained of a hardness on one side of the abdomen, distinct from the general uterine enlargement. During the whole period of utero-gestation there was no discharge of liq. amnii—no flooding. There was but one placenta and one membranous receptacle. Had this been a case of superfœtation would there not have been two placenta? Then how account for the condition of the undeveloped fœtus which must have been four or five months dead in utero, and still was perfectly free from decomposition, and gave rise to no uterine action? According to Dr. Ramsbotham "this may be explained by the fœtus never having been in contact with the external air;" then how account for some having been born putrid, under conditions similar to those related above, if the non-admission of air is of itself sufficient to prevent decomposition? Dr. Ramsbotham adds, "or

perhaps it may be accounted for by the powerful vital principle which is resident in the gravid uterus, and which is in fervid operation for the purpose of bringing to perfection the living being it contains, protecting the dead mass from the ordinary changes of decay, and acting as an antiseptic power." This, if not quite satisfactory as an explanation, is at all events a beautiful hypothesis. There is nothing in the after-history of the case necessary to be mentioned; convalescence having been rapid and uninterrupted. —*Canada Lancet.*

Employment of Position in Controlling Hæmorrhage. By FRANCIS B. QUINLAN, M.D., Trin. Coll., Dublin, Medical Adviser to St. Vincent's Hospital.

Pain, shock to the nervous system and hæmorrhage may be fairly considered the principal sources of immediate difficulty and danger in the actual performance of extensive surgical operations; and, as the all but universal employment of anæsthetic agents has, to some degree, neutralized the first two impediments, it may be of advantuge to recur to a plan of diminishing venous hæmorrhage, which, employed and described in the year 1845, has since been frequently resorted to, although not always with due acknowledgment to Dr. O'Ferrall, of St. Vincent's Hospital, the distinguished surgeon by whom this plan was first devised. It will be admitted that, while most cases of arterial hæmorrhage are susceptible of comparatively easy control, there is scarcely any bleeding so rapid, so tremendous, or so alarming in its effects as that experienced in the removal of large scrotal tumors, when the enormous tortuous veins—usually found in connection with these growths—have been divided while in a state of repletion; and it is to guard against such hæmorrhage that the plan to which I have alluded is especially directed.

The accuracy of these statements will be easily established by a brief review of some operations of the kind which have been performed with and without having recourse to this plan.

In the first of these cases, a large scrotal tumor, weighing about fifty pounds, was removed by the late Mr. Liston, the veins being in an engorged condition. Upon the first incisions being made, the blood flooded out, to use the words of that celebrated operator, "as

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from a shower-bath;" the patient rolled in exhaustion and agony from the table, and the operation was completed upon the floor; the patient collapsed, and was with difficulty restored by the energetic exhibition of stimulants. In Mr. Aston Key's operation, performed upon the Chinese Hoo-Loo, the results were similar, but, from the feeble Asiatic temperament of the patient, more disastrous. The operation lasted an hour and three quarters, and the patient, who had shown some signs of syncope during its continuance, died immediately after its conclusion. It may be observed that in both these cases the genital organs were necessarily sacrificed in an effort to hurry the operation to a conclusion, in order to save the patient from impending death from hæmorrhage.

Results of this character, occurring in the hands of some of the first operators of the day, were sufficiently appalling; and it speedily became evident that, unless some means could be devised to diminish this excessive hæmorrhage, the removal of such tumors must, like the extirpation of bronchocele, be for the present abandoned. It was, therefore with peculiar satisfaction that the profession learned, in the *Dublin Hospital Gazette* of February, 1845, that a method of operation had been devised by Dr O'Ferrall, by means of which he had removed an enormous scrotal tumor (fully equal to those removed by Liston and Aston Key) without difficulty in eight minutes, and with the loss of only five ounces of blood; the genital organs being preserved, and the patient having made a good recovery, notwithstanding attacks of erysipelas and various other unfavorable circumstances. Such an announcement could not fail to be in the highest degree gratifying; and it became all the more so when it was found the importance of Dr. O'Ferrall's plan of operation was only equaled by its extreme simplicity. Observing the great change produced in turgid varicose veins of the leg by placing the patient upon his back and elevating the limb, and the immediate arrest of hæmorrhage from such veins which ensues upon the adoption of this position, it occurred to Dr. O'Ferrall that, if the enlarged scrotum were held up, a similar withdrawal of the vital fluid would take place, particularly as regards the enlarged and tortuous veins which were the principal sources of hæmorrhage. The result completely justified the accuracy of this expectation—the more so as the hæmorrhage in these cases had been always observed to be principally

of a venous character; the arterial hæmorrhage, in Aston Key's case, being estimated to be scarcely one-twentieth of the whole.

Since the publication of Dr. O'Ferrall's plan, a complete change has occurred in these operations, which have since been performed in rather considerable number, and with an ease and success more or less resembling that experienced in his case. I now recur to the plan, because in two instances of operation published during the present year (in one of which an Asiatic was the subject) it appears to me that the able and successful operators, although adopting the method, omitted, in their reports of the cases, to make due acknowledgment to the author; contrasting, in this respect, with Mr. South, who, in his splendid work on Surgery, gives due prominence to Dr. O'Ferrall's plan.

The application of this method is by no means limited to the removal of large scrotal tumors. On the contrary, it has been resorted to by Dr. O'Ferrall in cases of considerable innocent tumors of a vascular character; and in amputations he has obtained great advantages by loosely applying the tourniquet, elevating the limb, emptying it of venous blood by manipulation, and then tightening the tourniquet. The limb can thus be kept in a state of comparative anæmia while the amputation is being accomplished; and a loss of blood can be prevented, which, by deteriorating the general quality of the vital fluid, might have laid the foundation of subsequent disease. In fact, the value of a position by which the entrance of arterial blood into a limb will be retarded, and the exit of venous blood facilitated, is almost as useful in the performance of an operation as in the treatment of inflammation.—*London Med. Times and Gazette.*

Average Birth-Rate.—In Scotland 34,443 births were registered in eight towns (Glasgow, Edinburgh, Dundee, Aberdeen, Paisley, Greenock, Leith and Perth) during the year 1862, being in the proportion of 384 births in every ten thousand of the estimated population, or one birth in every twenty-six persons. Of these, 3,424 were illigitimate. To whatever cause it may be owing, certain it is that the proportion of illegitimate births seems to be increasing year by year. The average birth-rate in London for the last ten years, gives 337 births in every ten thousand of the estimated population.—*Ibid.*

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Strength of the Fibres of Orleans Cotton.—Mr. Charles O'Neill exhibited a mounted fibre of Orleans cotton, torn by a gradually increasing weight suspended to its extremity. It had sustained a weight (gradually increased) of 162 grains for many minutes. Mr. O'Neill stated that there were 143 such fibres in ·01 grain of cotton, each fibre therefore weighing less than the ten-thousandth part of a grain. The strongest fibres were capable of supporting more than two million times their own weight. He is engaged in making experiments upon the tensile strengths of various fibres by a special apparatus, but they are not yet completed.—*Jour. Fr. Inst., from Proc. Manch. Lit. and Phil. Soc., March* 16, 1863.

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